

# SECTION 3

## SERVICING DIAGRAMS

### 1. INSPECTION PROCEDURE

Table 3-1-1

Operation steps		Items to be confirmed	Inspection block	Page	
				Block Diagram	Circuit Diagram
1. Power SW ON	Time setting Timer/counter, Memory  Channel selection, AFC operation, EE picture & tone quality	Clock setting operation Mode display lamp TV receive condition, Channel select operation, AFC operation level, EE picture quality, Tone signal level	KDB Power Logic RF reception Video (EE, REC mode) Audio (EE, REC mode)	3-9 3-7 3-13 3-8 3-20 3-23	3-36 3-30 3-39 3-33 3-44 3-48
2. Cassette-in and Cassette-out	Cassette-in Cassette loading Eject Cassette-out	F/L mechanism operation Cassette loading operation Eject operation Indicator lamp Abnormal sound	Logic	3-13	3-39
3. Key Entry Operation  Remote Control	REC, PLAY Cue/Review Still, Frame advance/slow FF/REW	VTR display, OSP Each mode operation (Tape drive operation) Abnormal sound	KDB Logic	3-9 3-13	3-36 3-39
4. Special Functions Counter Functions  Tracking	Linear time counter, Index/skip search, Time search Digital auto tracking	Each mode operation  Mode operation	Servo/Logic  Servo/Logic	3-13  3-13	3-39  3-39
5. Playback Function Picture Sharpness Tone Quality Others	PLAY (Test tape: ST-C6, ST-C7) Cue/Review Still/Slow	Resolution, S/N Hue, Saturation, Color unevenness, Color dropout, Sound distortion, Level variation, Picture noise, Jitter Picture swing, Skew distortion, Flicker, Beat	Video PLAY system Audio PLAY system Servo system	3-20 3-23 3-13	3-44 3-48 3-39
6. REC/PLAY Functions Picture Sharpness Tone Quality Others	REC/PLAY	Resolution, S/N Hue, Saturation, Color unevenness, Color dropout, Sound distortion, Level variation, Picture noise, Jitter Picture swing, Skew distortion, Flicker, Beat	Video PLAY system Audio PLAY system Servo system	3-20 3-23 3-13	3-44 3-48 3-39

#### How to use the table

1. When inspecting a defective VTR, proceed according to the steps shown in the table.
2. Check the items to be confirmed for each operation step.
3. If a problem is found on the item, check waveforms (level) referring to the block diagram relating to the items.
4. Use PC board pattern diagram and schematic diagram to examine the circuit precisely.

## 2. REMOVAL OF CABINET

1. Disconnect the plug from the inlet.
2. Remove three screws ② securing the top cover ①.
3. Unlock two hooks at both left and right of the rear side, and slide the top cover ① backward to remove.
4. Remove the connector (KDB unit side) of the JSB unit, and remove the front panel ③.

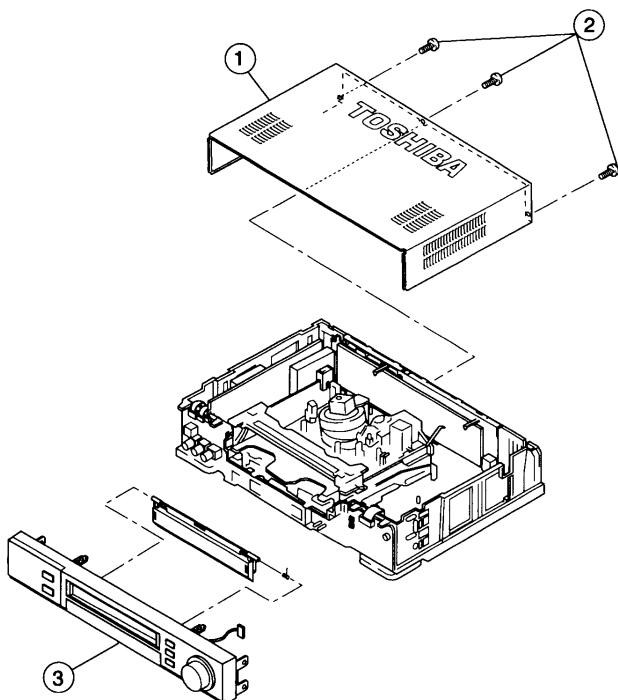


Fig. 3-2-1

## 3. ELECTRICAL UNITS LOCATION DIAGRAM

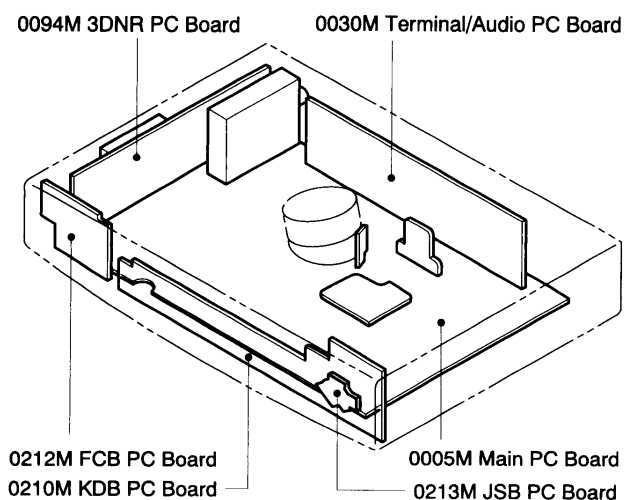


Fig. 3-3-1

## 4. STANDING PC BOARDS FOR SERVICING

After removing the mechanical deck with the main PC board, place the mechanical deck to upright. Then perform servicing in the condition that all the units are connected each other.

### Note:

- Applying an excessive force to the connector connecting KDB and FCB PC board will damage the connector. So, take much care when removing them.

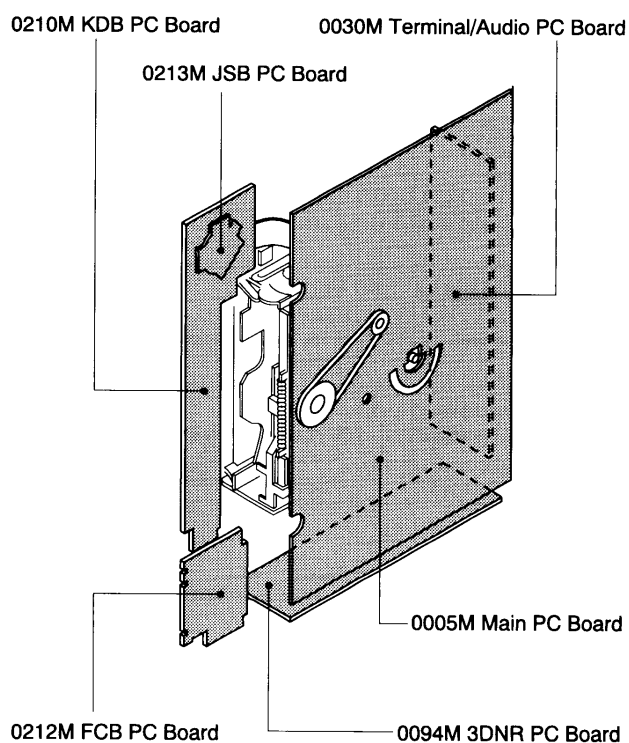


Fig. 3-4-1

## 5. PART SYMBOLS

### 5-1. Precautions for Part Replacement

- In the schematic diagram, parts marked  $\Delta$  (ex.  $\Delta$  F801) are critical part to meet the safety regulations, so always use the parts bearing specified part codes (SN) when replacing them.
- Using the parts other than those specified shall violate the regulations, and may cause troubles such as operation failures, fire etc.

### 5-2. Solid Resistor Indication

Table 3-5-1

<b>Unit</b>	None ..... $\Omega$	akb ..... a.b k $\Omega$
	R ..... $\Omega$	aKb ..... a.b k $\Omega$
	aRb ..... a.b $\Omega$	M ..... M $\Omega$
	k ..... k $\Omega$	aMb ..... a.b M $\Omega$
	K ..... k $\Omega$	
<b>Tolerance</b>	None ..... $\pm 5\%$	E ..... $\pm 1\%$
	B ..... $\pm 0.1\%$	G ..... $\pm 2\%$
	C ..... $\pm 0.25\%$	K ..... $\pm 10\%$
	D ..... $\pm 0.5\%$	M ..... $\pm 20\%$
<b>Rated Wattage</b>	(1) Chip Parts None ..... 1/16W (2) Other Parts None ..... 1/6W Other than above, described in the Circuit Diagram.	
<b>Type</b>	None ..... Carbon film S ..... Solid R ..... Oxide metal film W ..... Metal film W ..... Cement FR ..... Fusible	

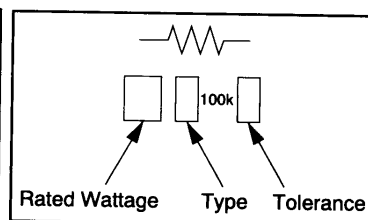


Fig. 3-5-1

### 5-3. Capacitance Indication

Table 3-5-2

<b>Symbol</b>	$\begin{array}{l} \text{---} \text{  }^+ \text{---} \text{NF} \text{---} \text{Electrolytic, Special electrolytic} \\ \text{---} \text{  } \text{---} \text{Non polarity electrolytic} \\ \text{---} \text{  } \text{---} \text{Ceramic, plastic} \\ \text{---} \text{  }^M \text{---} \text{Film} \\ \text{---} \text{  }^A \text{---} \text{Trimmer} \end{array} $
<b>Unit</b>	None ..... F      n ..... nF $\mu$ ..... $\mu$ F      N ..... nF U ..... $\mu$ F      anb ..... a.b nF u ..... $\mu$ F      aNb ..... a.b nF aUb ..... a.b $\mu$ F      p ..... pF aub ..... a.b $\mu$ F
<b>Rated voltage</b>	None ..... 50V For other than 50V and electrolytic capacitors, described in the Circuit Diagram.
<b>Tolerance</b>	(1) Ceramic, plastic, and film capacitors of which capacitance are more than 10 pF. None ..... $\pm 5\%$ or more B ..... $\pm 0.1\%$ C ..... $\pm 0.25\%$ D ..... $\pm 0.5\%$ F ..... $\pm 1\%$ G ..... $\pm 2\%$ (2) Ceramic, plastic, and film capacitors of which capacitance are 10 pF or less. None ..... more than $\pm 5\%$ pF B ..... $\pm 0.1$ pF C ..... $\pm 0.25$ pF (3) Electrolytic, Trimmer Tolerance is not described.
<b>Temperature characteristic (Ceramic capacitor)</b>	None ..... SL For others, temperature characteristics are described. (For capacitors of 0.01 $\mu$ F and no indications are described as F.)

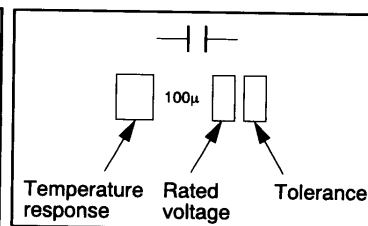


Fig. 3-5-2

## 5-4. Inductor Indication

Table 3-5-3

Unit	None ..... H μ ..... μH m ..... mH
Tolerance	None ..... ±5% B ..... ±0.1% C ..... ±0.25% D ..... ±0.5% F ..... ±1% G ..... ±2% K ..... ±10% M ..... ±20%
Type	PL ..... Peaking For other, model name is described.

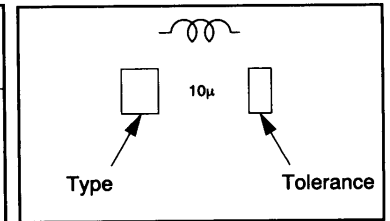


Fig. 3-5-3

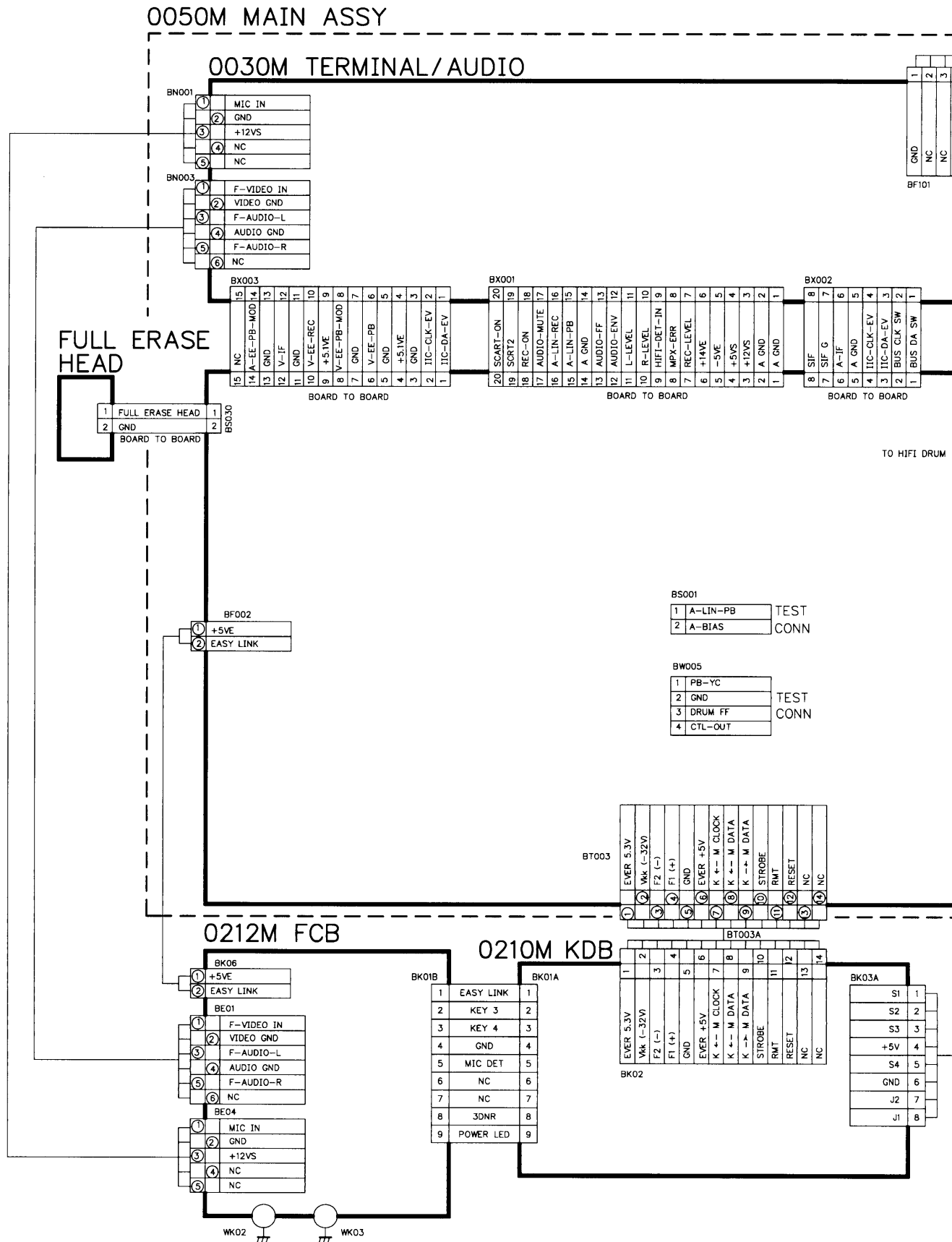
## 5-5. Waveform and Voltage Measurement

- Measurement of waveform and voltage at each section in the color circuits was conducted with sufficient service color bar signal being received and reproduced in normal conditions.
- Waveforms and voltage values for the remaining circuit were measured with a broadcasting signal normally received, so they may vary slightly according to the programs being received. Use them as a measure for servicing.
- All voltage values except the waveforms are expressed in DC and measured by a digital voltmeter.

[illegible]

3-5

## 6. PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM



WIRING  
POWER  
PIF

WIRING  
POWER  
PIF

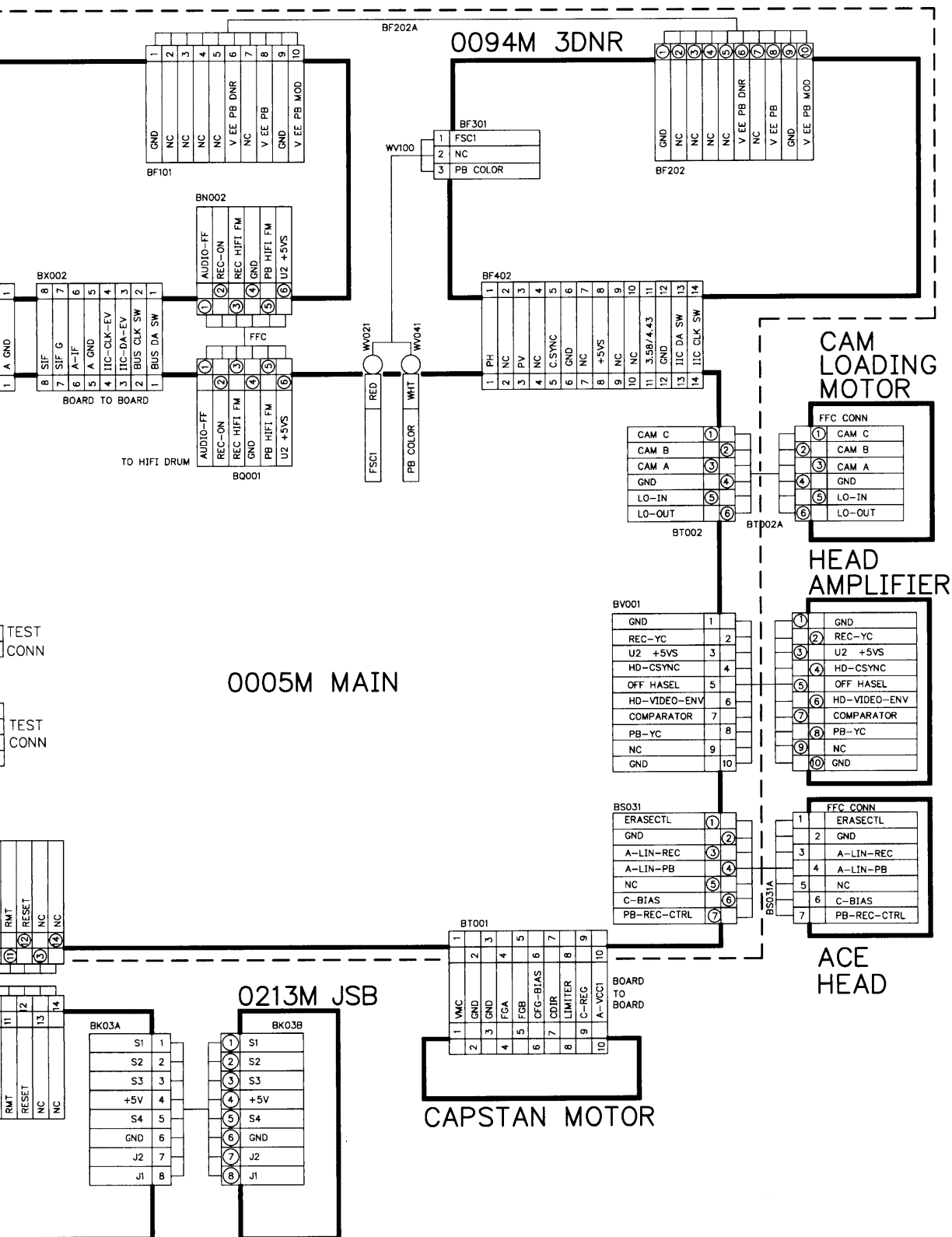


Fig. 3-6-1

## 7. BLOCK DIAGRAMS

### 7-1. Power Block Diagram

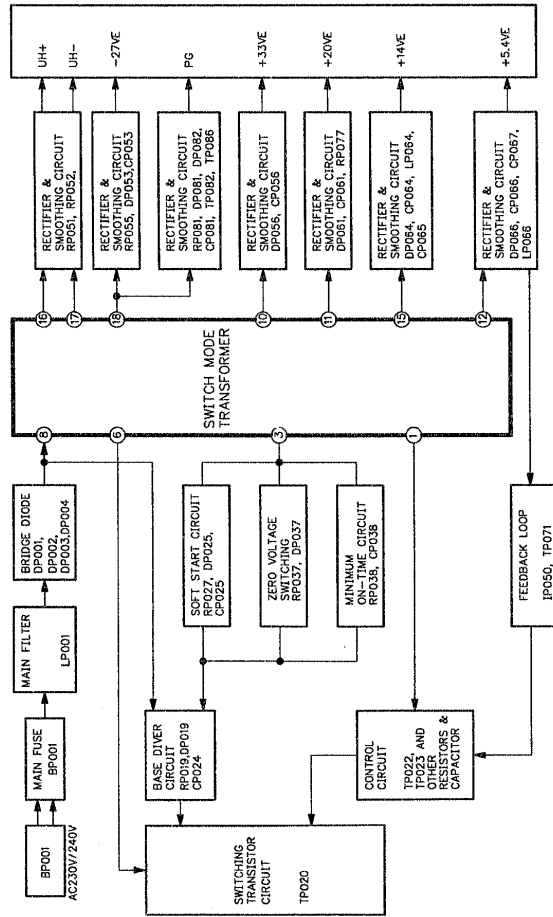


Fig. 3-7-1

### 7-2. PIF Block Diagram

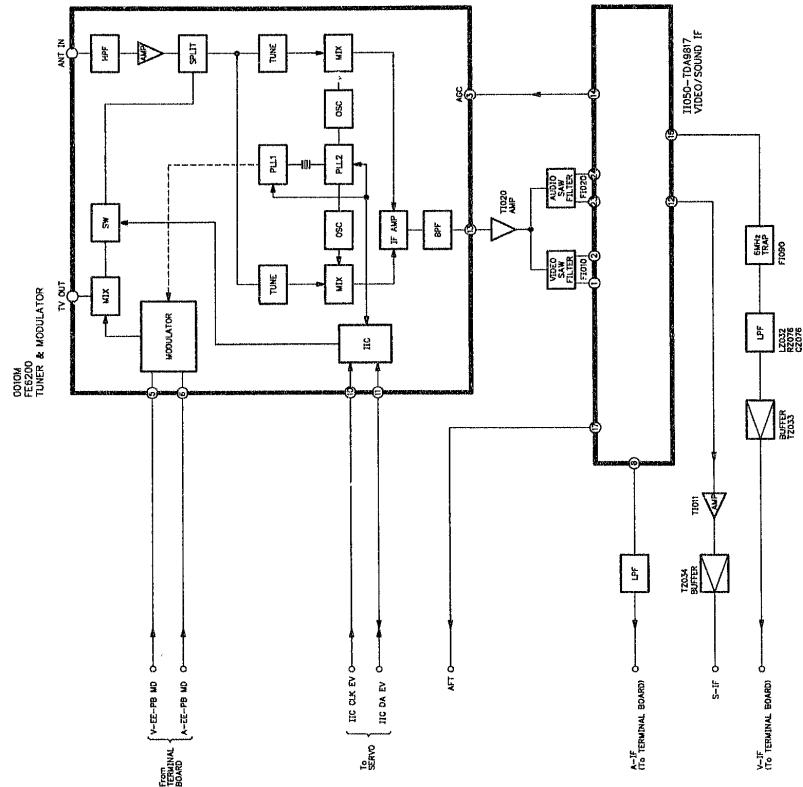


Fig. 3-7-2

## 7. BLOCK DIAGRAMS

### 7-1. Power Block Diagram

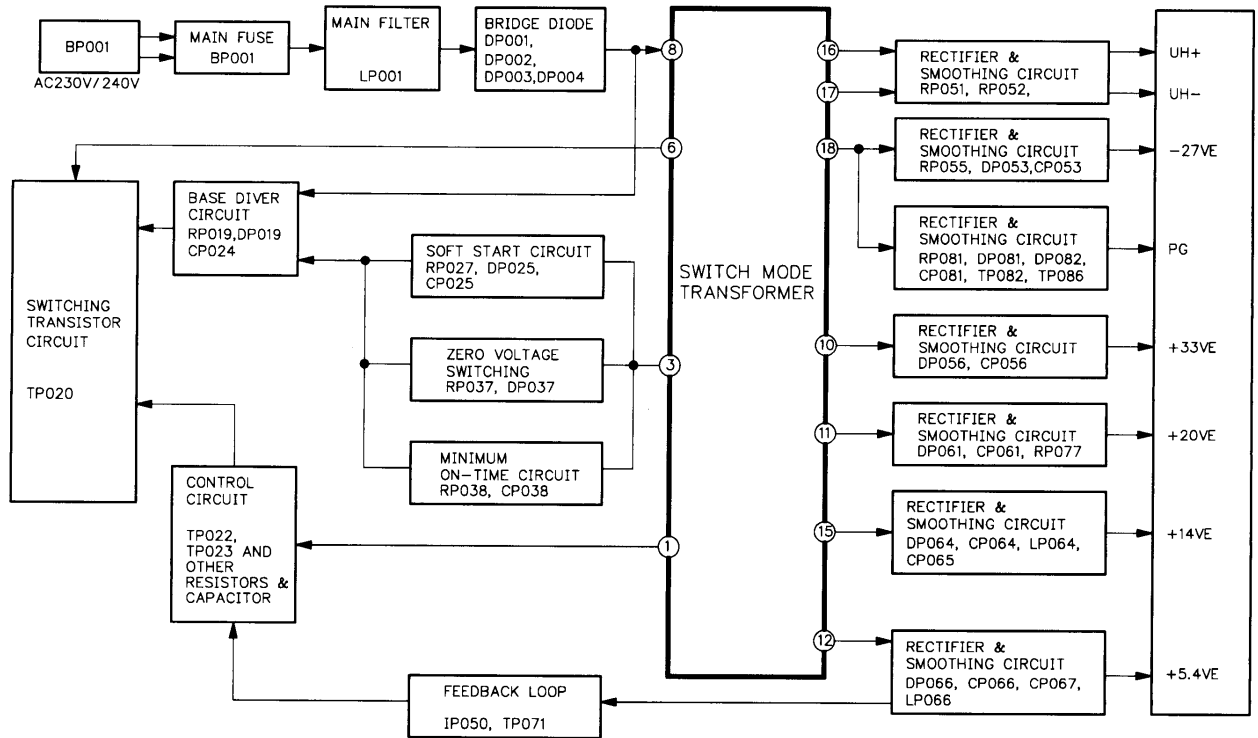


Fig. 3-7-1

## 7-2. PIF Block Diagram

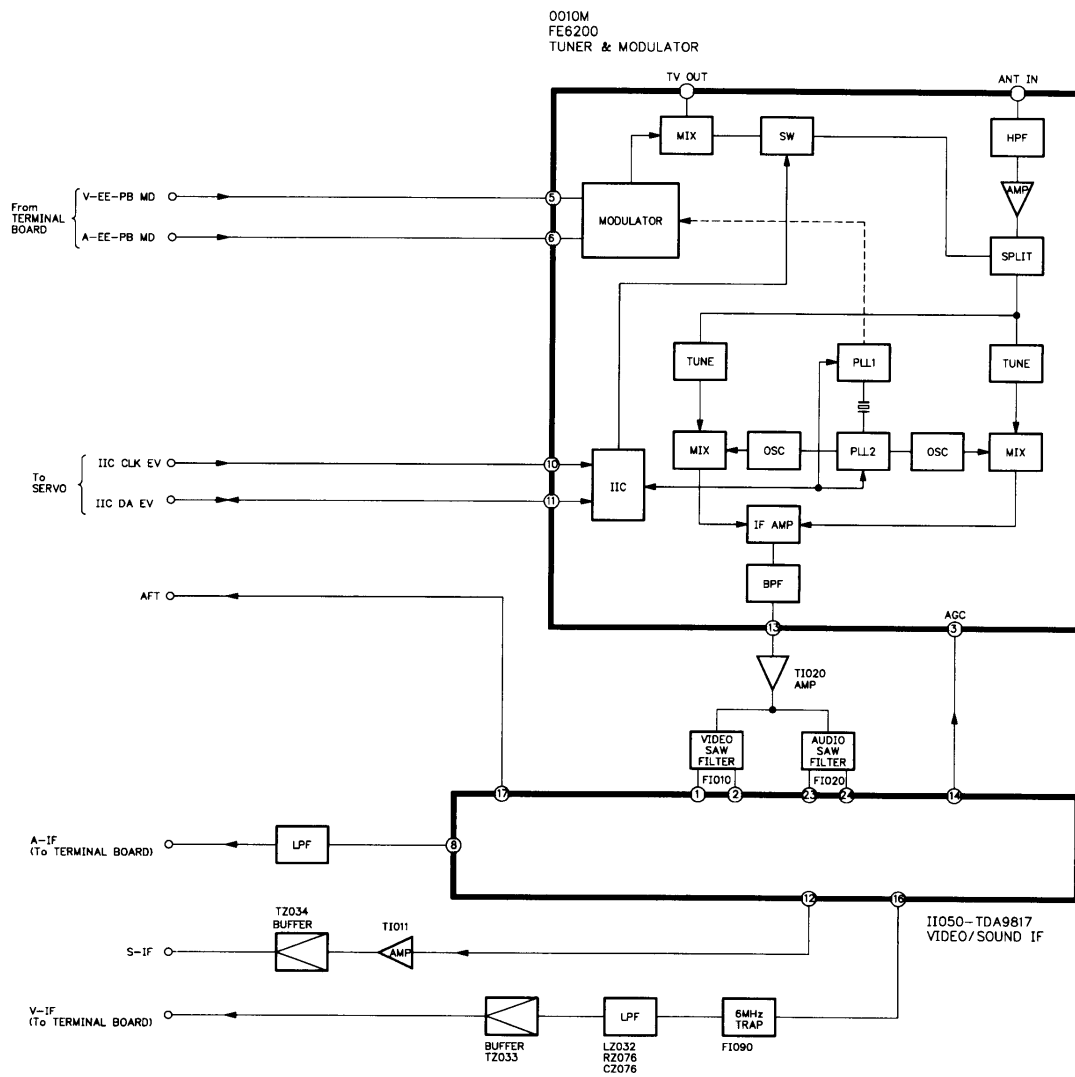


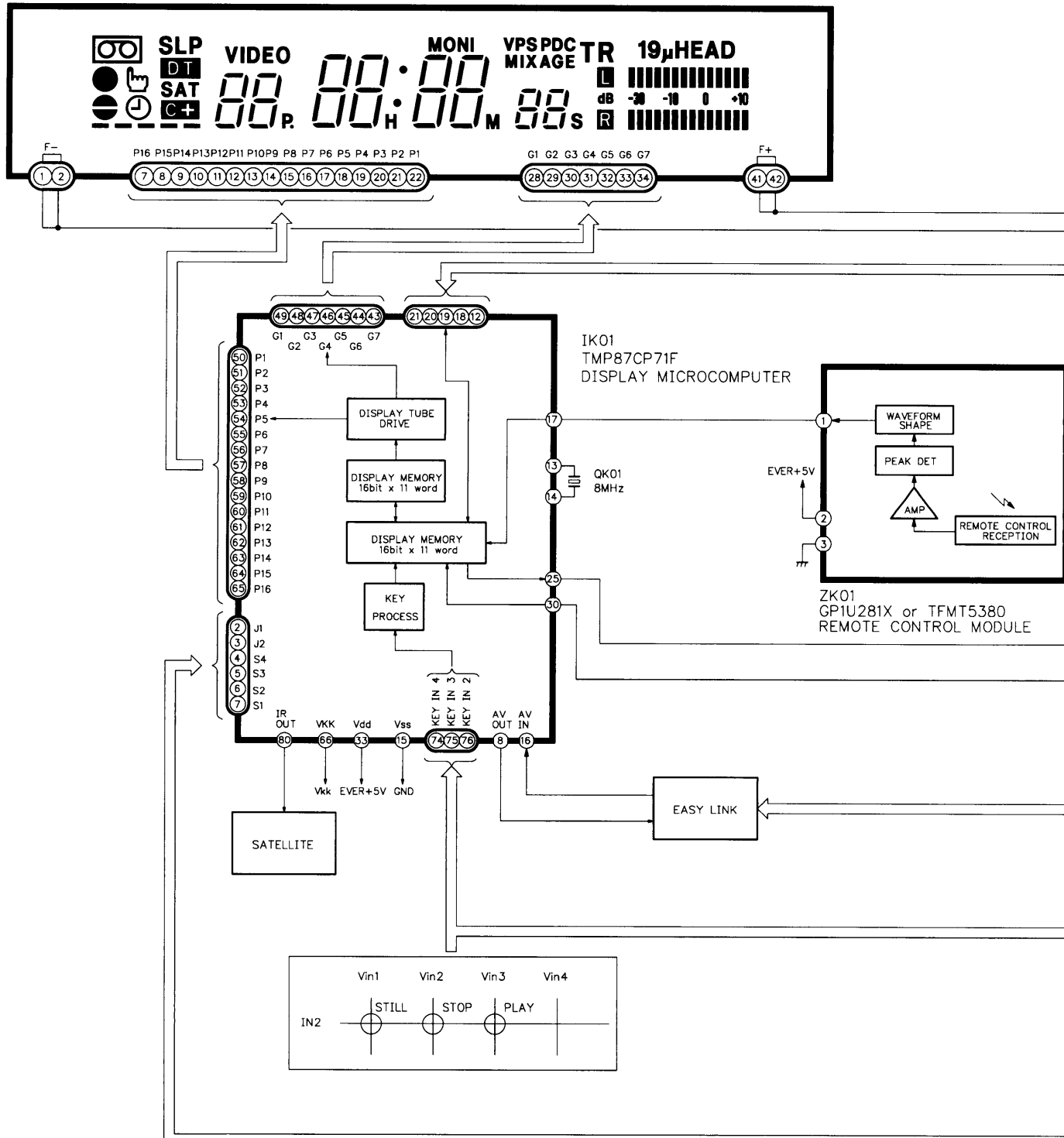
Fig. 3-7-2

KDB	KDB
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### 7-3. KDB Block Diagram

GX01 7-MT-171GNK



KDB

KDB

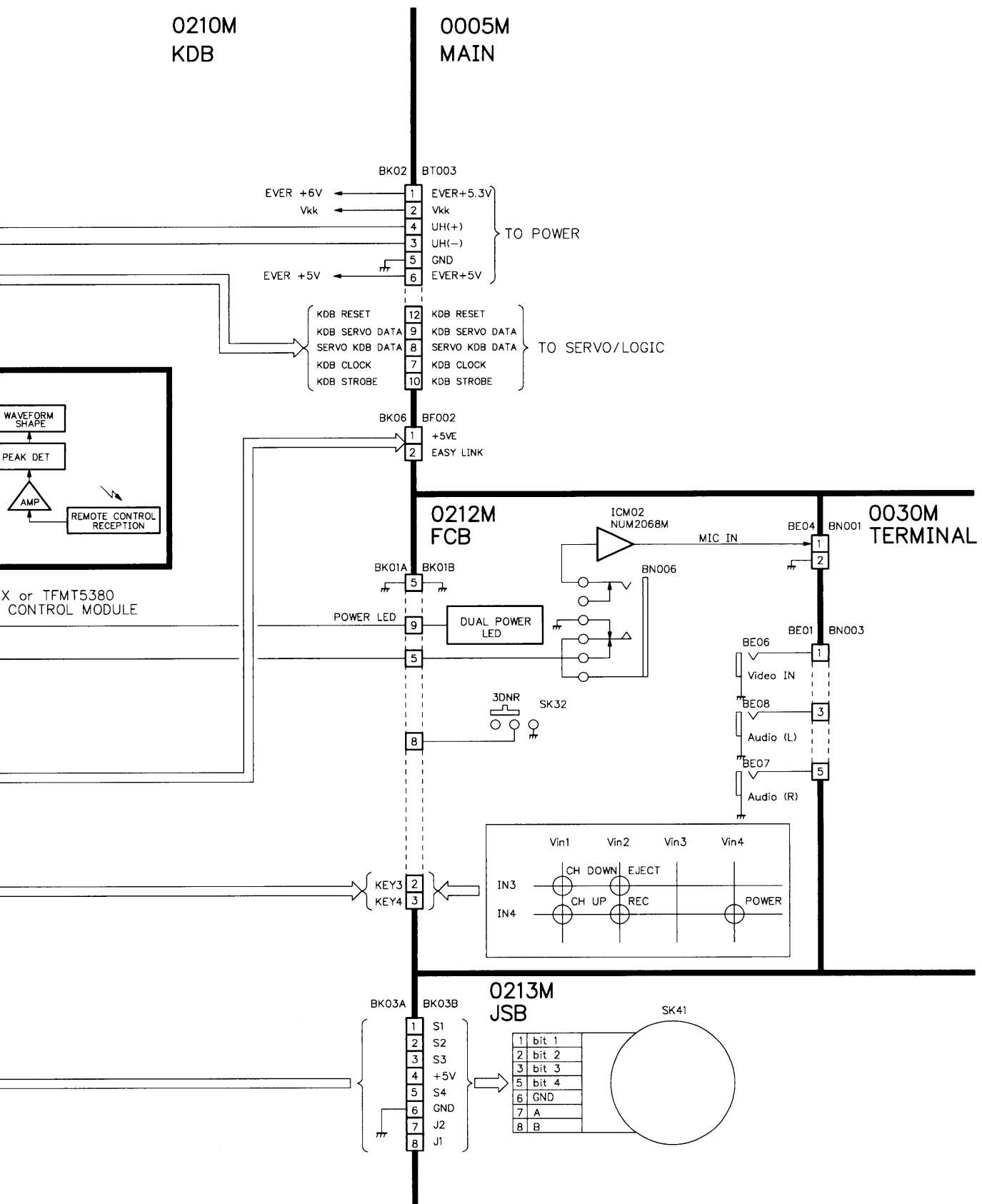
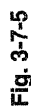
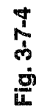
0210M  
KDB0005M  
MAIN

Fig. 3-7-3

### 7-3-2. Key Display GX01 7-MT-171GNK



### 7-3-3. Display Pattern

**Fig. 3-7-6**

### 7-3-1. Display Microcomputer Terminal Function

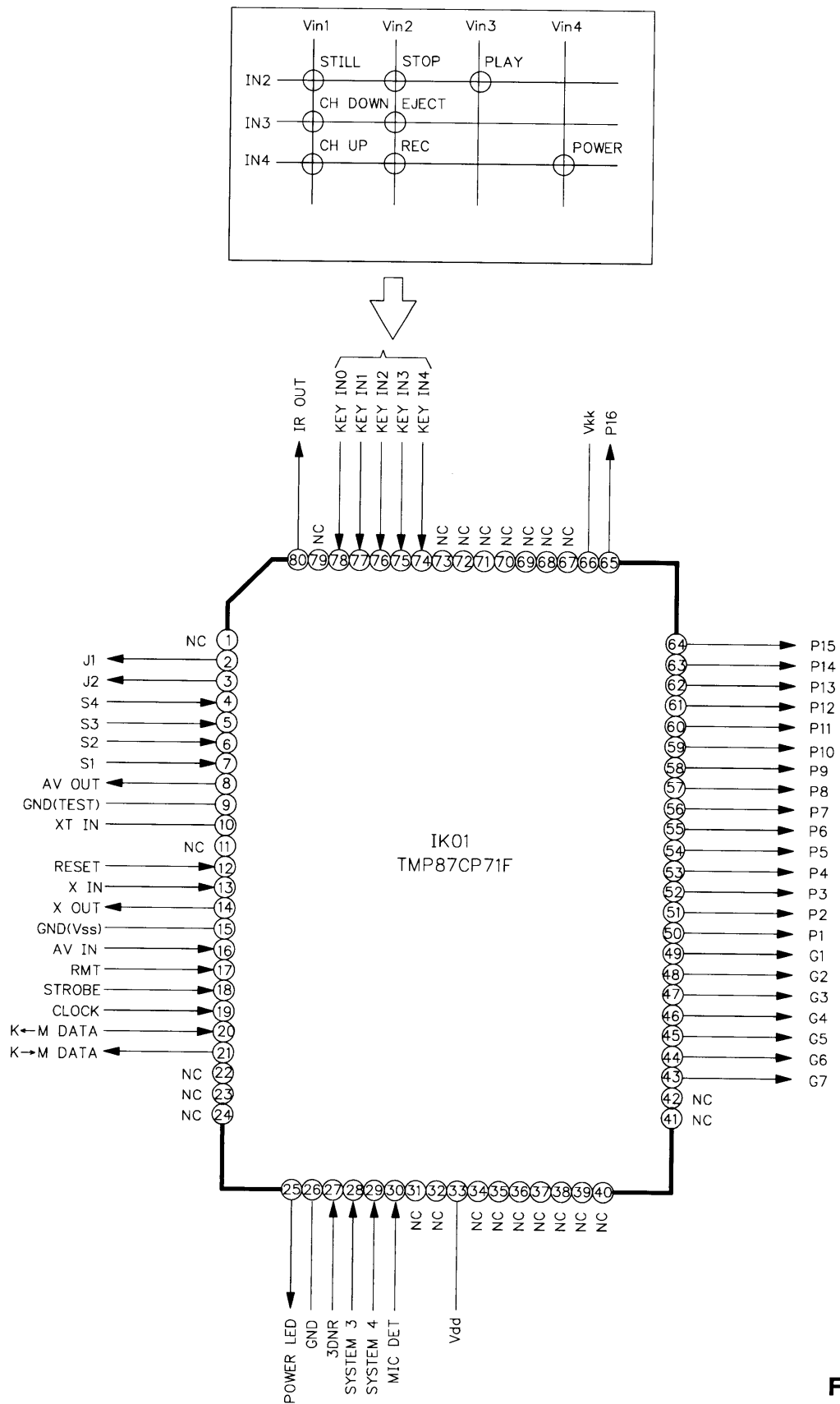


Fig. 3-7-4

### 7-3-2. Key Display GX01 7-MT-171GNK

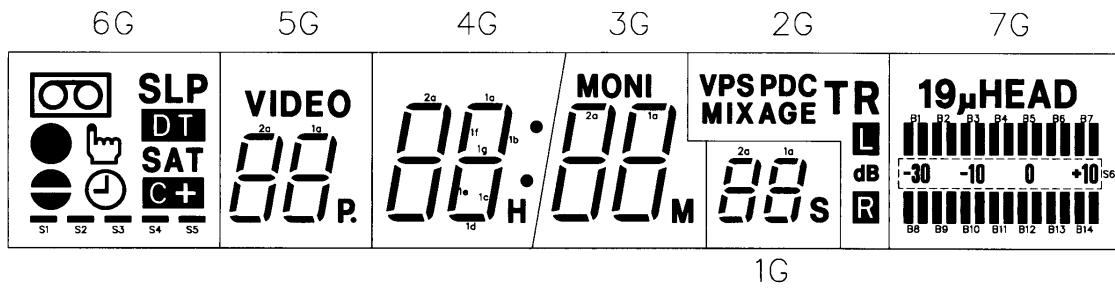


Fig. 3-7-5

### 7-3-3. Display Pattern

	7G	6G	5G	4G	3G	2G	1G
P1	B1	⌚	1d	VPS	1d	1d	1d
P2	B2	⬤	1e	MIX	1e	1e	1e
P3	B3	👉	1c	AGE	1c	1c	1c
P4	B4	⬤	1g	PDC	1g	1g	1g
P5	B5	P	1f	L	1f	1f	1f
P6	B6	L	1b	dB	1b	1b	1b
P7	B7	S	1a	R	1a	1a	1a
P8	19μHEAD	⌚	VIDEO	TR	H	M	S
P9	B8	S5	2d	—	2d	2d	2d
P10	B9	S4	2e	—	2e	2e	2e
P11	B10	S3	2c	—	2c	2c	2c
P12	B11	S2	2g	—	2g	2g	2g
P13	B12	S1	2f	—	2f	2f	2f
P14	B13	C+	2b	—	2b	2b	2b
P15	B14	SAT	2a	—	2a	2a	2a
P16	S6	DT	P	—	col.	MONI	—

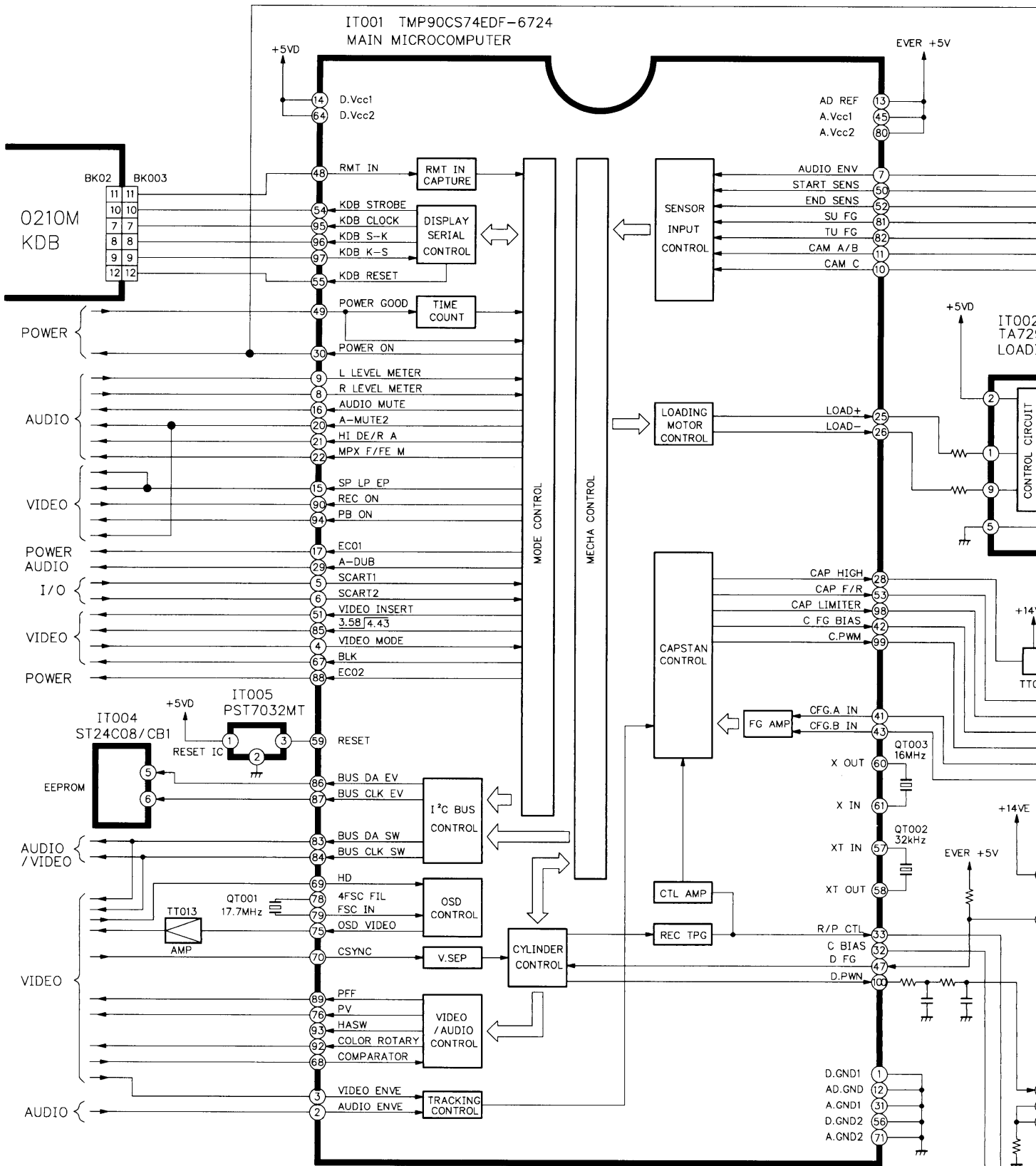
Fig. 3-7-6

SERVO/  
LOGIC



**3-14**

## 7-4. Servo/Logic Block Diagram



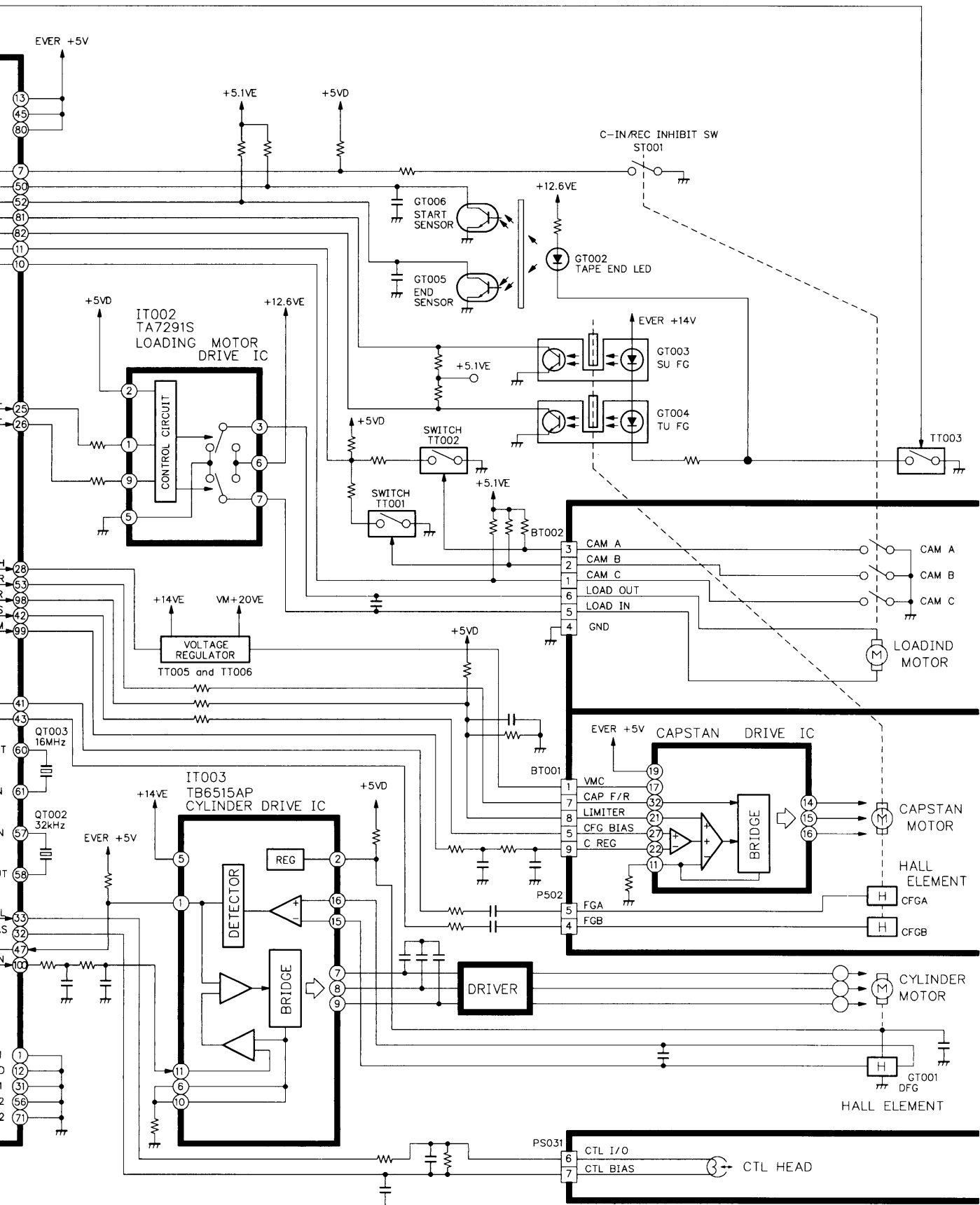


Fig. 3-7-7

# 7-4-1. Main Microcomputer Terminal Function

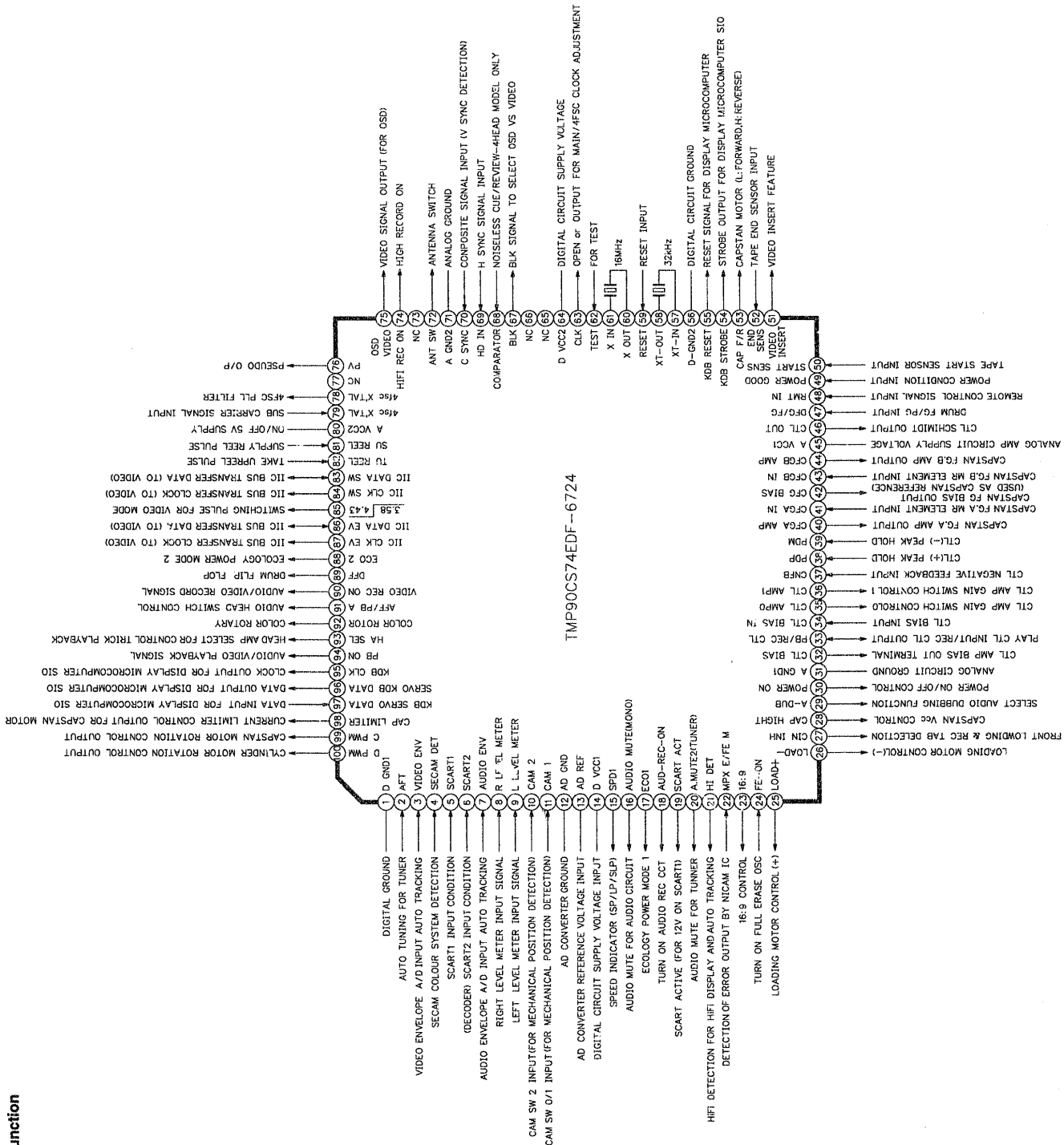
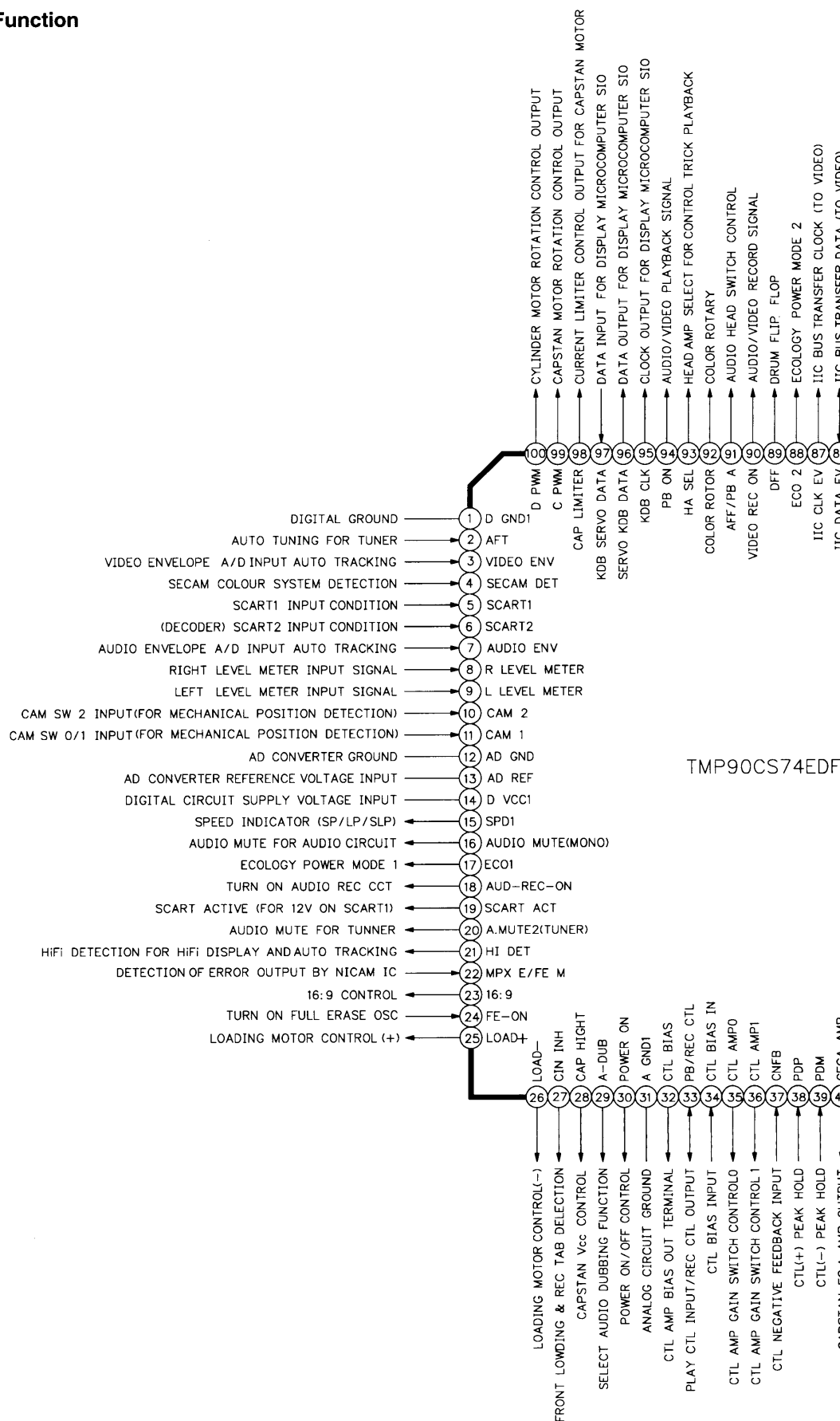


Fig. 3-7-8

## 7-4-1. Main Microcomputer Terminal Function



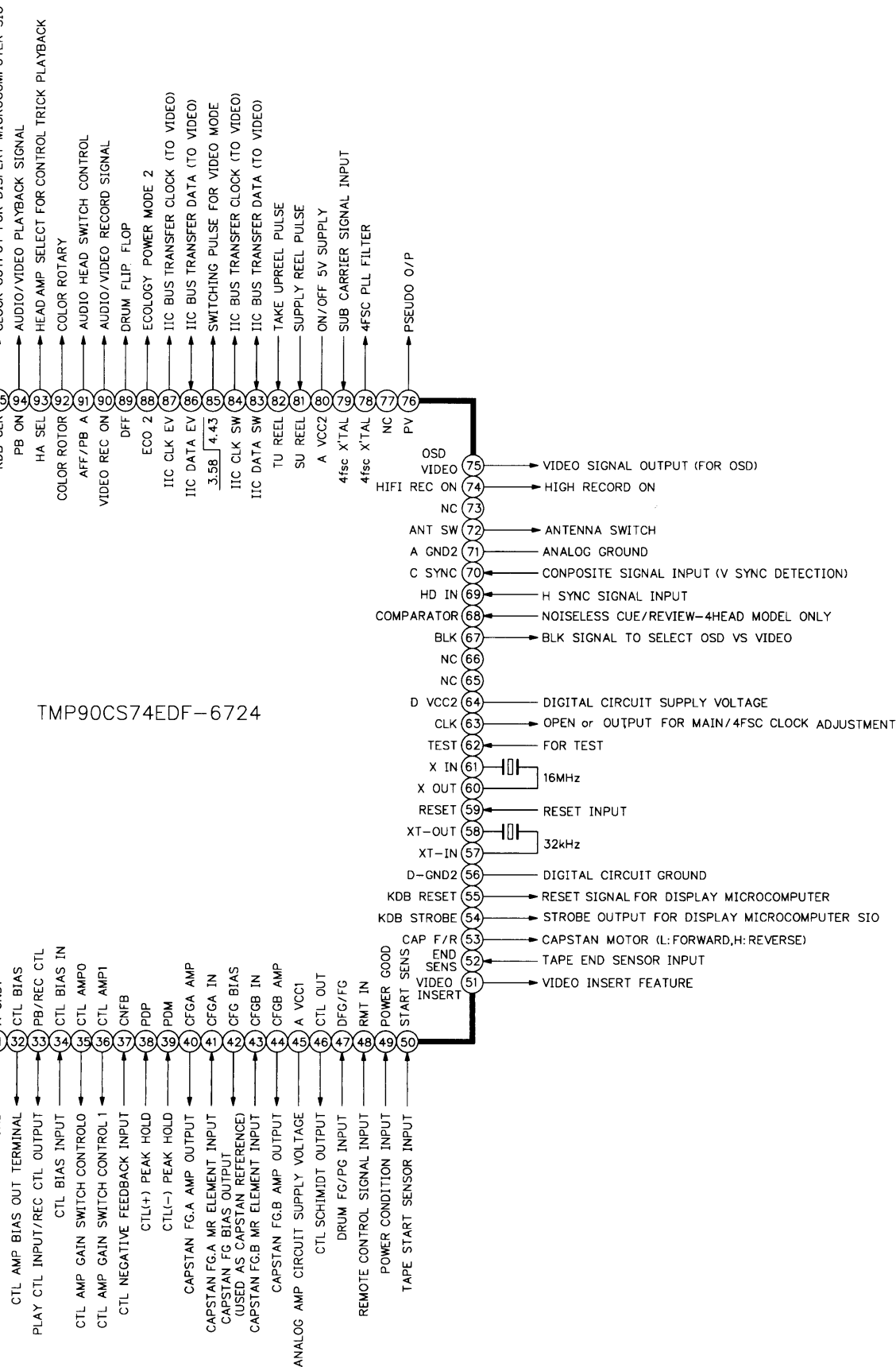


Fig. 3-7-8



## 7-4-2. Main Microcomputer Output Polarity

110-9807

Pin No	MODE Port Name	ACT.	SLOT IN	SLOT OUT	Loading	Un-loading	STOP	STAND-BY	FF	REW	PLAY SP LP	FRAME SP LP	CUE SP LP	REV SP LP	STILL SP LP	SLOW SP LP	REC SP LP	REC PAUSE SP LP	
16	A. MUTE1	H	H	H	H	H	H	H	H	H	L	H	H	H	H	H	H	H	
18	AUDIO REC ON	H	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	L	
23	16:9	H	L: WHEN 16:9 IS SET TO OFF & AUTO										H: WHEN 16:9 IS SET TO ON						
20	A.MUTE2	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	
21	HIFI DET	H	L: WHEN NO HIFI DETECTED										H: WHEN HIFI DETECTED						
17	EC01	REFER TO TABLE ONE																	
24	FE ON	H	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	L	
25	LOAD+	L	L	H	L	H	L	L	L	L	L	L	L	L	L	L	L	L	
26	LOAD-	L	H	L	H	L	L	L	L	L	L	L	L	L	L	L	L	L	
27	CIN INH	L	L	L	H	H	H	H	H	H	H	H	H	H	H	H	H	H	
28	CAP HIGH	H	L	L	L	L	L	L	L	L	L	L	L(2)	L(2)	L	L	L	L	
30	POWER ON	L	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	
46	CTL OUT		H/L	H/L	H/L	H/L	H/L	H/L		←	←			←	←			L	
53	CAP F/R	—	L	H	L	H	H	H	L	H	L			H	L			L	
54	S.STB		←	←	←	←	←	←	←	←	←	←	←	←	←	←	←	←	
67	BLK	H	H ONLY WHEN OSD IS ON																
72	ANT SW	L	ONLY L AFTER PLAY MODE																
74	HIFI REC ON	H	H ONLY WHEN REC MODE																
76	PV		L	←	←	←	←	←	←			L						L	
83	I2C DATA1		←	←	←	←	←	←	←	←	←	←	←	←	←	←	←	←	
84	I2C CLOCK1		←	←	←	←	←	←	←	←	←	←	←	←	←	←	←	←	
85	EC02	REFER TO TABLE ONE																	
86	I2C DATA2		←	←	←	←	←	←	←	←	←	←	←	←	←	←	←	←	
87	I2C CLOCK2		←	←	←	←	←	←	←	←	←	←	←	←	←	←	←	←	
89	DFF		←	←	←	←	←	←	←	←	←	←	←	←	←	←	←	←	
92	COLOR ROTARY		←	←	←	←	←	←	←	←	←			←	H L			←	
93	HASW		H	H	L	L	L	H	(4)	(4)	L(3)H			←	←	←	L H	L H	
95	S.CLK		←	←	←	←	←	←	←	←	←	←	←	←	←	←	←	←	
96	S.DATA OUT		←	←	←	←	←	←	←	←	←	←	←	←	←	←	←	←	
98	CAP LIMITER	PWM	L	L	PWM	←	L	PWM	←	←	←	PWM	←	←	L	PWM	←	←	
99	C-PWM	PWM	PWM	PWM	PWM	←	L	L	PWM	←	←	PWM	←	←	L	PWM	←	L	
100	D-PWM	PWM	L	L	PWM	←	L	PWM	←	←	←	←	←	←	←	←	←	←	

TABLE ONE

MODES	EC01 (PIN 17)	EC02 (PIN 88)
ON MODE	LOW 0.028V	HIGH 3.792V
STAND-BY MODE	LOW 0.028V	HIGH 3.859V
★EC02 MODE	HIGH 5.36V	HIGH 3.792V
EC01 MODE	HIGH 5.36V	LOW

Note:

(2) : H in Accel CUE/REV or during CUEX2/REVX2 mode (NTSC SP &amp; SLP modes, PAL SP mode)

(3) : L in NTSC SP mode/H in NTSC SLP mode.

(4) : H in NTSC SLP mode

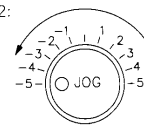


# Mode Shift Table

Power (Remote control unit)	TIMER REC	EJECT	STOP	FF	REW	PLAY	REC	PAUSE	SLOW	Frame advance	Shuttle Posi. (-5)	Shuttle Posi. (-4)	Shuttle Posi. (-3)	Shuttle Posi. (-2)	Shuttle Posi. (-1)	Shuttle Posi. (1)	Shuttle Posi. (2)	Shuttle Posi. (3)	Shuttle Posi. (4)	Shuttle Posi. (5)	INDEX (+)	INDEX (-)	JOG forward	JOG reverse	
Power on	Stop	*1	○	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	
Power on	Stop	*1	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	
Power off	Power off	Error	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	
Power off	Power off	*1	○	○	○	○	○*5	×	×	×	Review (L)	REW	REW	REW	REW	FF	FF	FF	FF	Cue (L)	INDEX search FF	INDEX search REW	×	×	
Power off	Power off	*1	○	○	Cue(L)	○	○	×	×	×	Review (L)	REW	REW	REW	REW	FF	FF	FF	FF	Cue (L)	×	×	×	×	
Power off	Power off	*1	○	○	○	Review (L)	○	×	×	×	Review (L)	REW	REW	REW	REW	FF	FF	FF	FF	Cue (L)	×	×	×	×	
Power off	Power off	*1	○	○	Cue(L)	Review (L)	×	×	STILL *8	Slow (H)	×	Review (H)	Review (H)	Review (L)	Reverse Play	Reverse Play	Play	Play	Cue (L)	Cue (H)	Cue (H)	INDEX search FF	INDEX search REW	×	×
Power off	Power off	*1	×	○	×	×	×	*6	○	×	×	×	×	×	×	×	×	×	×	×	Marking	×	×	×	×
Power on	×	Power off	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	Marking	×	×	×	×
Power off	Power off	*1	×	○	×	×	×	×	REC	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	
Power on	×	Power off	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	
Power off	Power off	*1	○	○	○*2	Review (L)	○	×	×	×	×	Review (H)	Review (H)	Review (L)	Reverse Play	Reverse Play	Play	Play	Cue (L)	Cue (H)	Cue (H)	×	×	×	×
Power off	Power off	*1	○	○	Cue(L)	○*3	○	×	×	×	×	Review (H)	Review (H)	Review (L)	Reverse Play	Reverse Play	Play	Play	Cue (L)	Cue (H)	Cue (H)	×	×	×	×
Power off	Power off	*1	○	○	Cue(L)	Review (L)	*4	*7	PLAY	Slow (H)	*4	Review (H)	Review (L)	Reverse Play	Reverse Slow(H)	Reverse Slow(L)	Slow (L)	Slow (H)	Play	Cue (L)	Cue (H)	Rewrite	×	Frame advance forward	Frame advance reverse
Power off	Power off	*1	○	○	Cue(L)	Review (L)	○	×	STILL *8	Slow (H)	×	Review (H)	Review (L)	Reverse Play	Reverse Slow(H)	Reverse Slow(L)	Slow (L)	Slow (H)	Play	Cue (L)	Cue (H)	×	×	×	×
Power off	Power off	*1	○	○	Cue(L)	Review (L)	○	×	STILL *8	Slow (H)	×	Review (H)	Review (L)	Reverse Play	Reverse Slow(H)	Reverse Slow(L)	Slow (L)	Slow (H)	Play	Cue (L)	Cue (H)	×	×	×	×
Power off	Power off	*1	○	○	Cue(L)	Review (L)	*4	*7	PLAY	Slow (H)	*4	Review (H)	Review (L)	Reverse Play	Reverse Slow(H)	Reverse Slow(L)	Slow (L)	Slow (H)	Play	Cue (L)	Cue (H)	Rewrite	×	Frame advance forward	Frame advance reverse
Power off	Power off	*1	×	○	×	×	×	×	Audio dubbing pause	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
Power off	Power off	*1	×	○	×	×	×	×	Audio dubbing	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×

(L) ————— X5 (PAL SP/LP mode, NTSC SP/SLP mode)  
(H) ————— X13 (PAL SP/LP mode), X9 (NTSC SP mode), X27 (NTSC SLP mode)  
e Slow (L) ————— 1/12 slow (PAL SP/LP mode), 1/15 slow (NTSC SP/SLP mode)  
e Slow (H) ————— 1/6 slow (PAL SP/LP mode), 1/7 slow (NTSC SP/SLP mode)  
cassette is loaded with a safety tab, VTR enters Timer Recording Stand-by mode if timer recording is reserved.  
cassette is loaded with a safety tab, VTR displays ERROR on the display if timer recording is not reserved.  
cassette without a safety tab is loaded, VTR ejects the tape.  
FF mode when pressing FF button continuously for less than 0.7s, and CUE (H) mode when pressing FF button continuously for more than 0.7s.  
REW mode when pressing REW button continuously for less than 0.7s, and REVIEW (H) mode when pressing REW button continuously for more than 0.7s.  
FRAME ADVANCE mode when pressing the button once, 1/25 slow in PAL SP/LP mode and 1/30 slow in NTSC SP/SLP mode when pressing the button continuously.  
cassette is loaded with a safety tab, VTR enters REC mode. When a cassette is loaded without a safety tab, VTR enters EJECT mode.  
TIMER REC mode (shifts only by key on the VTR)  
mode (When a cassette is loaded without a safety tab, VTR enters EJECT mode.)  
will be released itself after 5 minutes to its previous mode.  
key input mode. X: No shift (same mode).

Note 2:

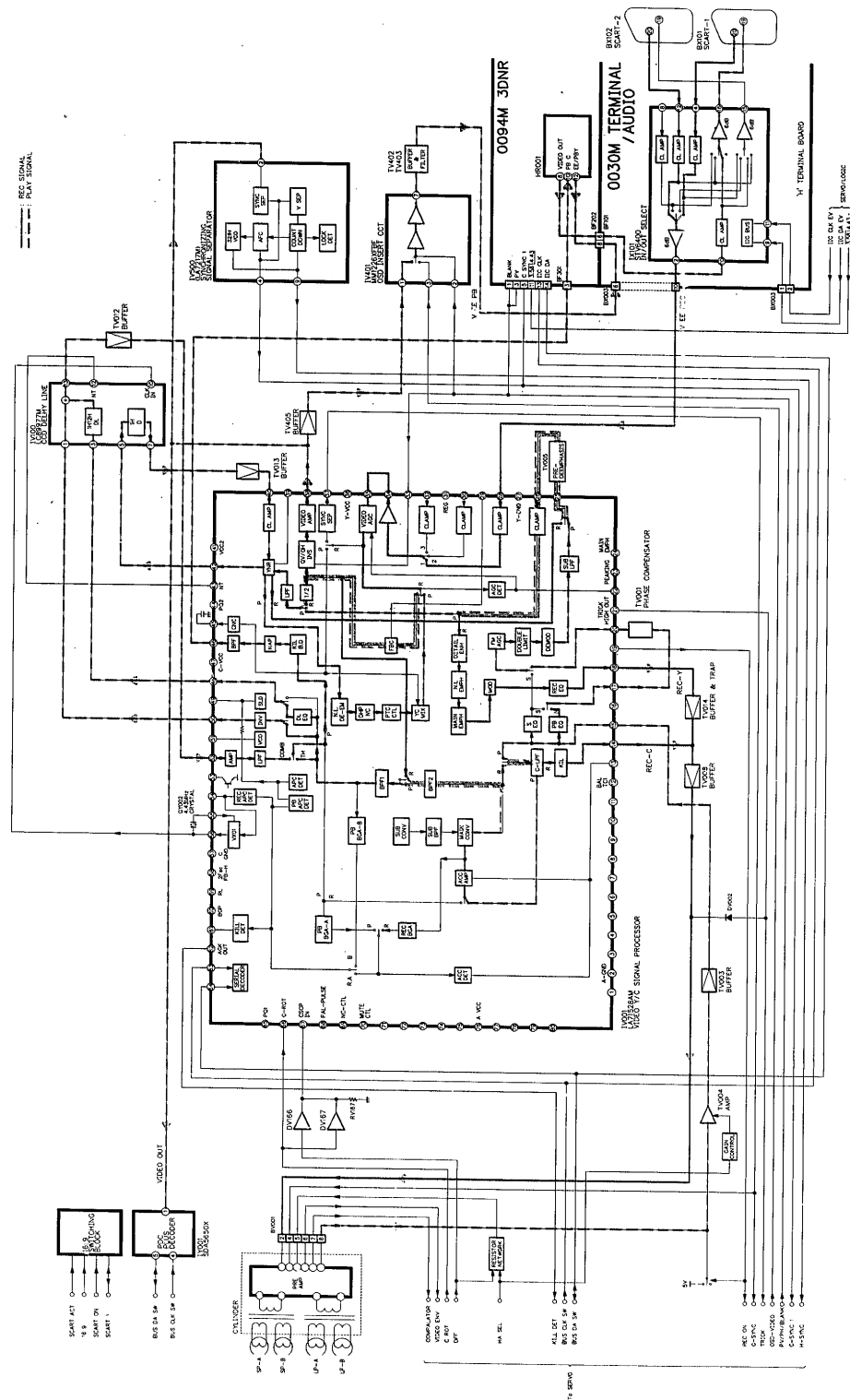


SHUTTLE POSITION

Table 3-7-2

7-5. Video Block Diagram

110-9807



3-20

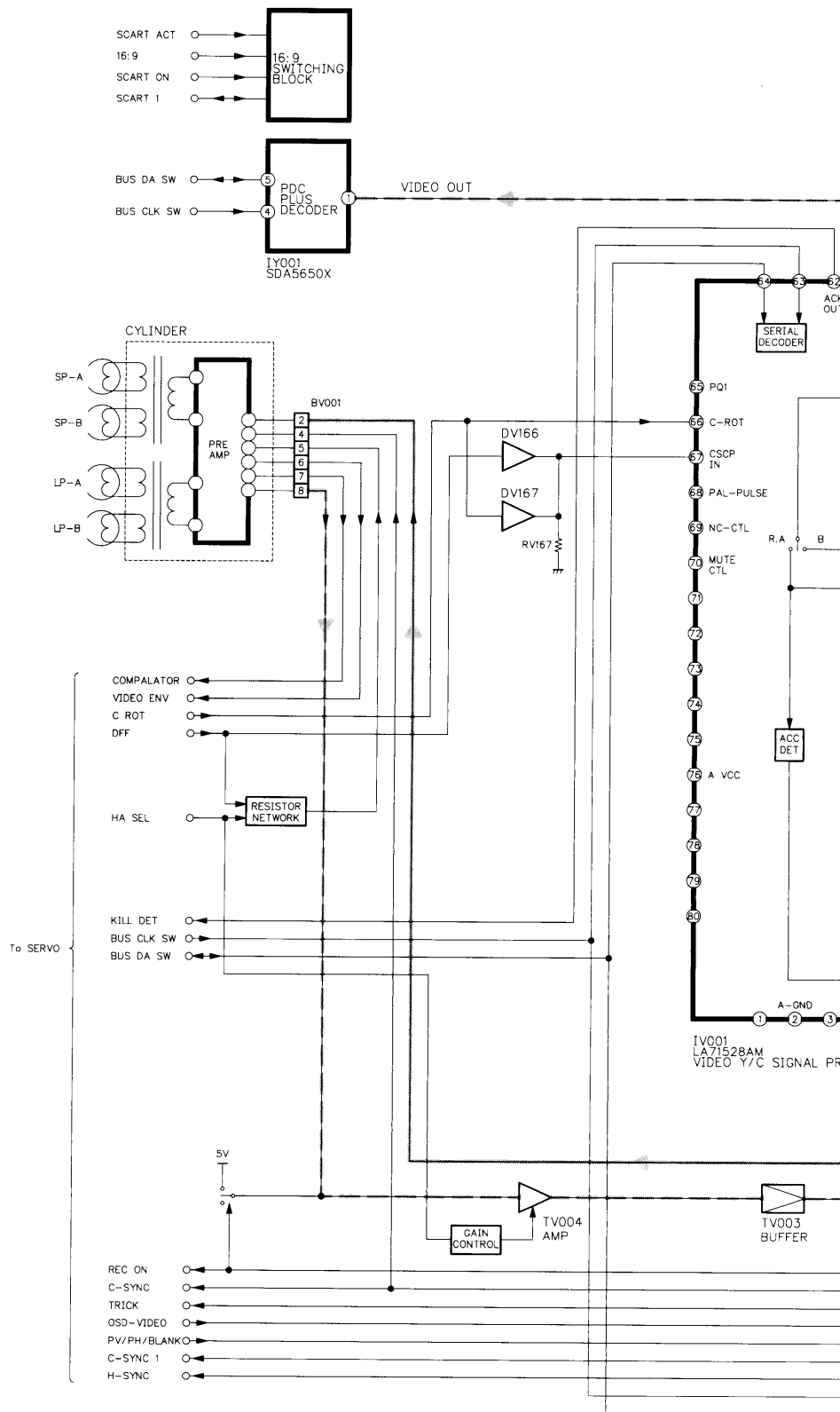
3-21

3-22

Fig. 3-7-9

## 7-5. Video Block Diagram

110-9807





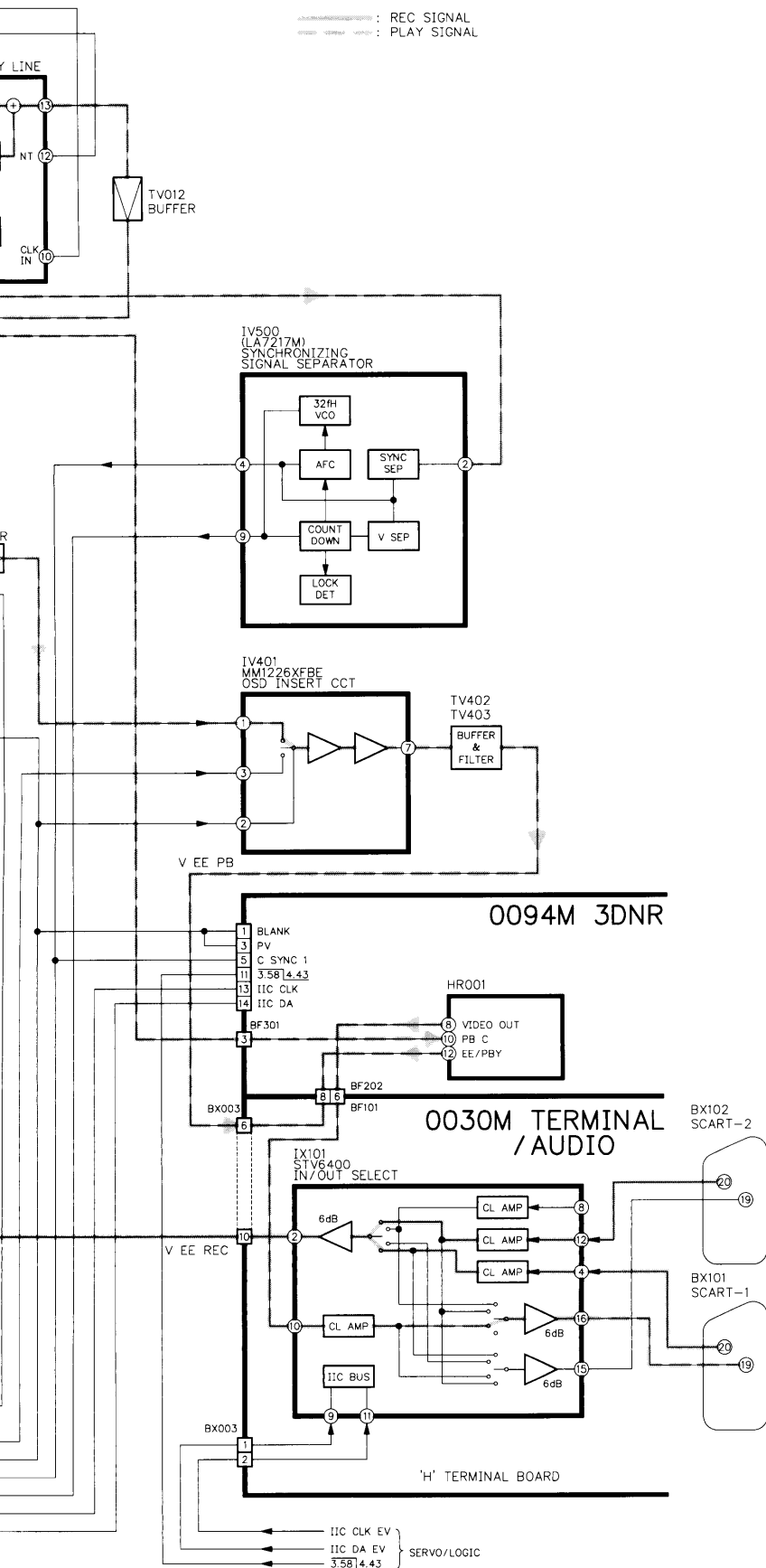
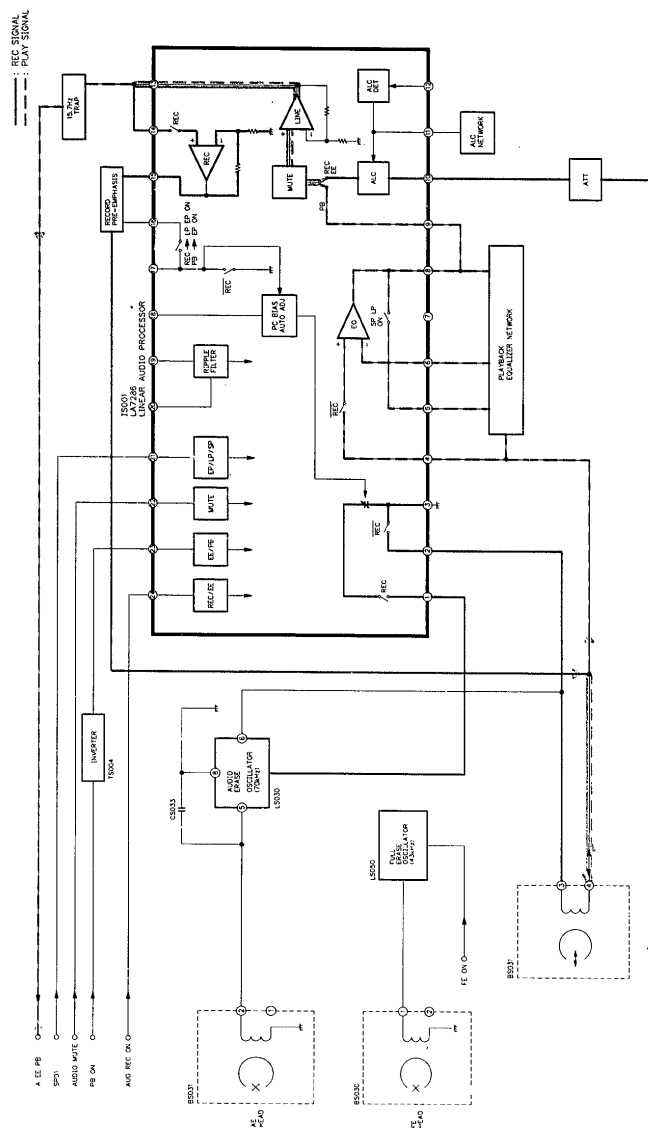
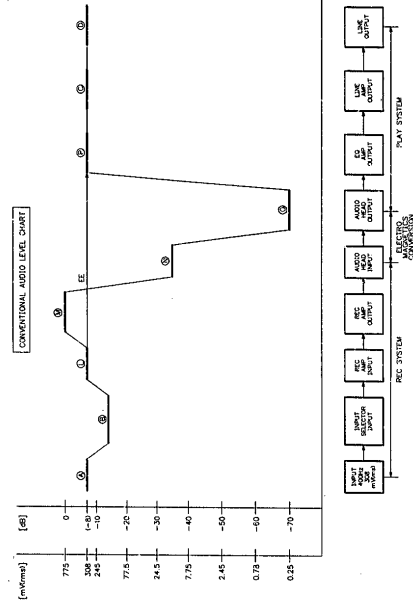


Fig. 3-7-9

### 7-6-1. Conventional Audio Level Chart



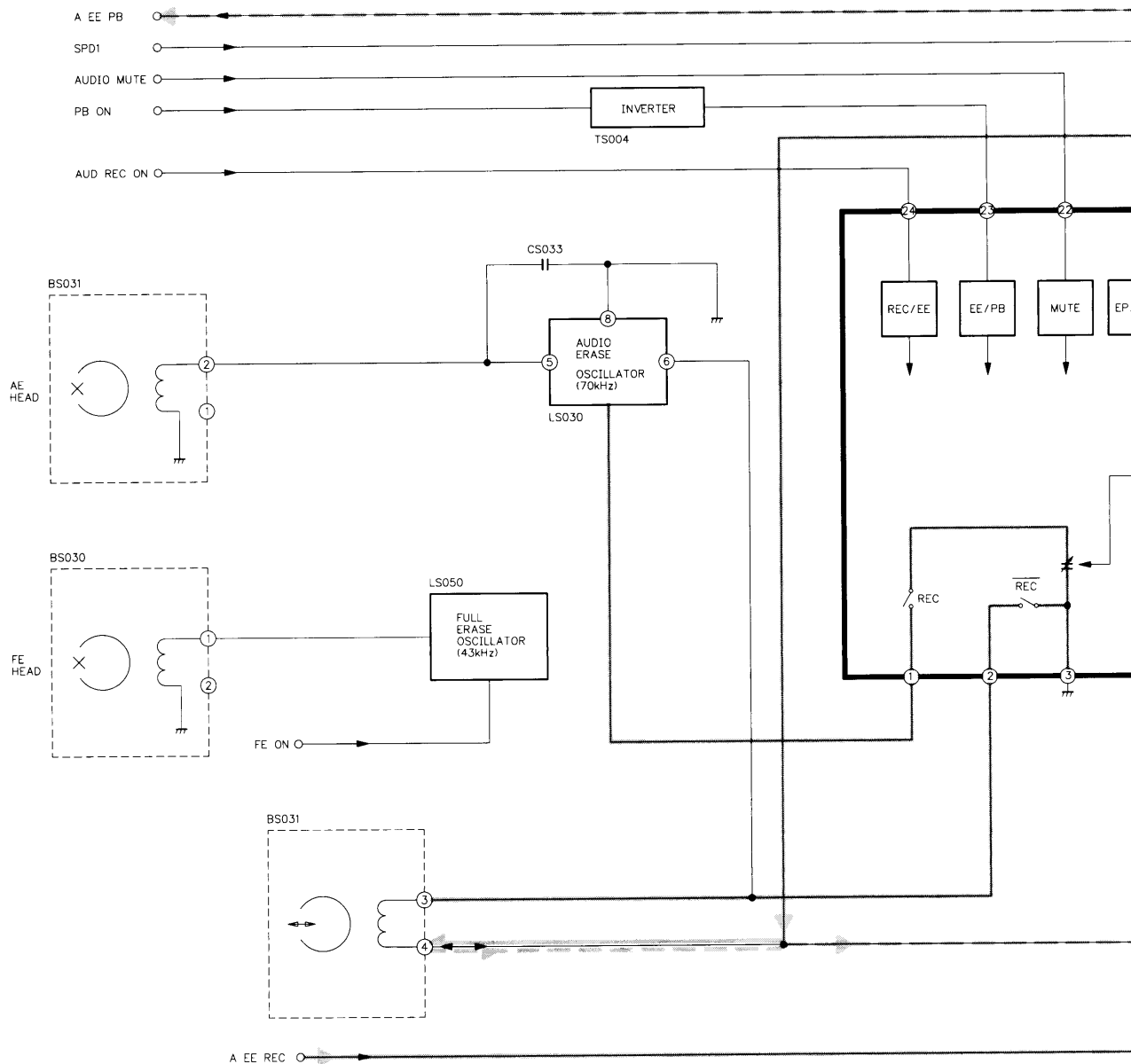
**Fig. 3-7-10**

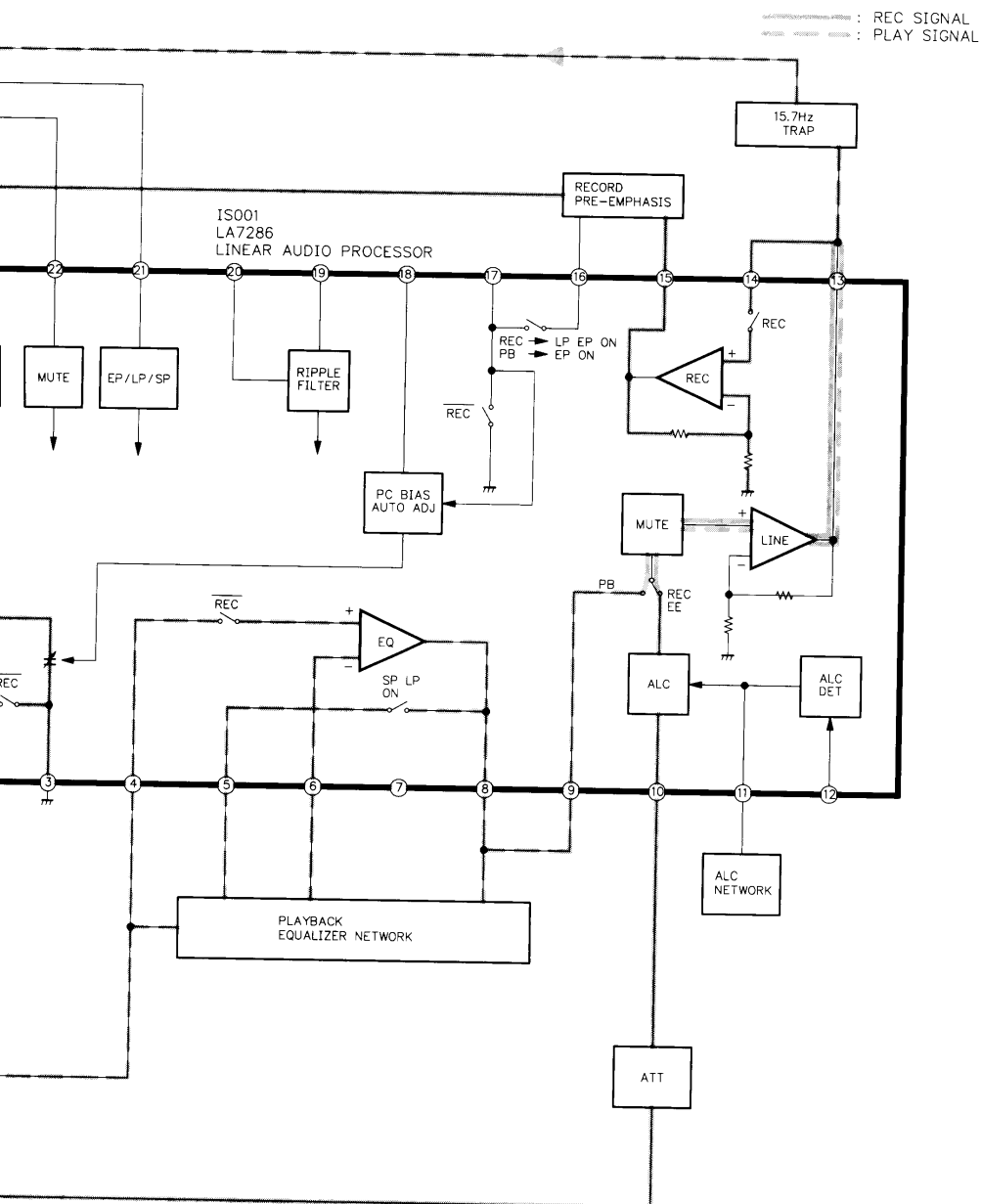


**Fig. 3-7-11**

## 7-6. Conventional Audio Block Diagram

110-9807





**Fig. 3-7-10**

### 7-6-1. Conventional Audio Level Chart

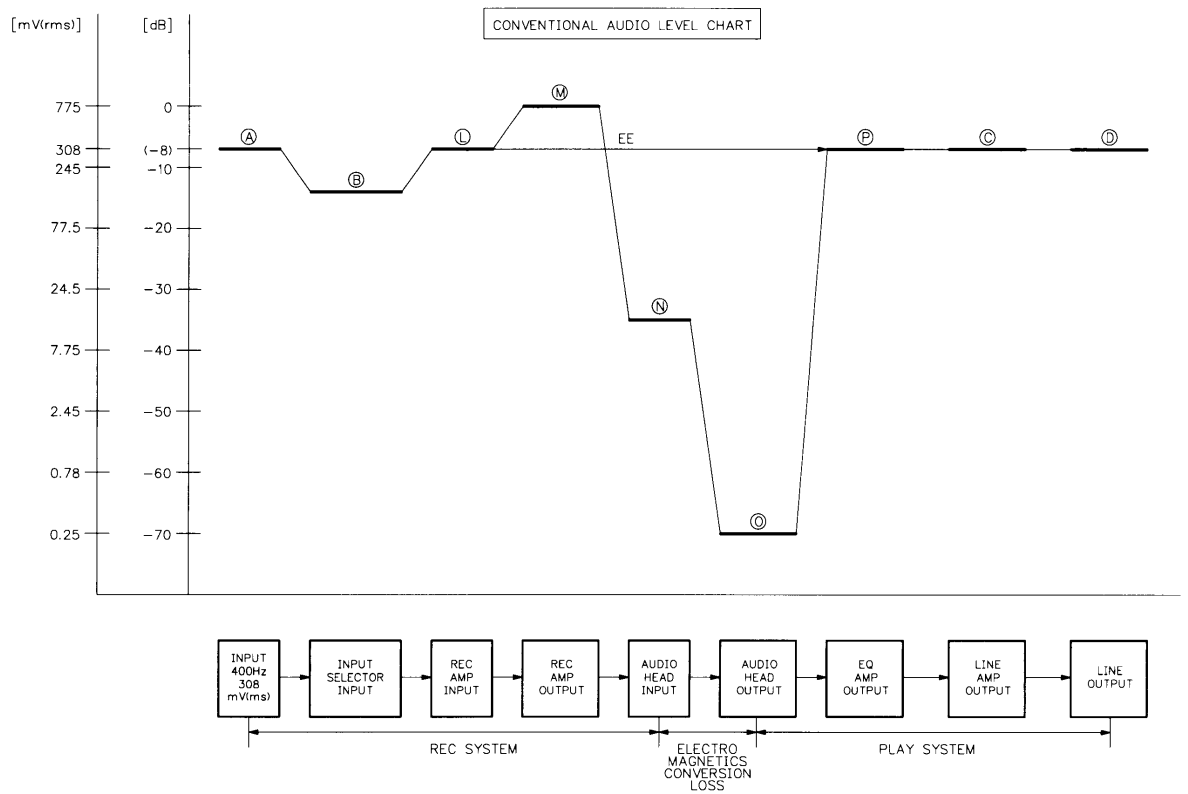


Fig. 3-7-11

7-7. Hi-Fi Audio Block Diagram  
110-9807

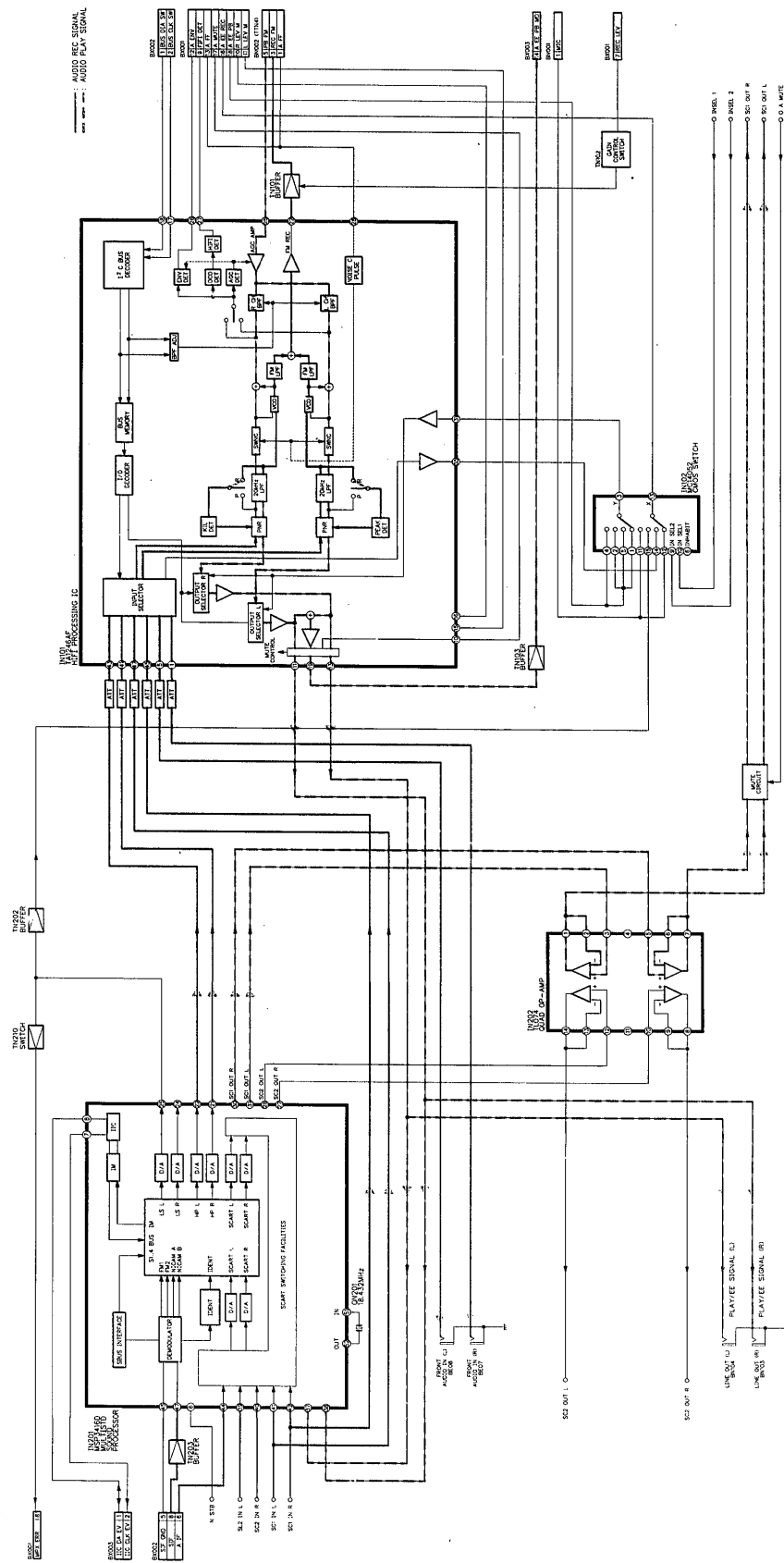


Fig. 3-7-12

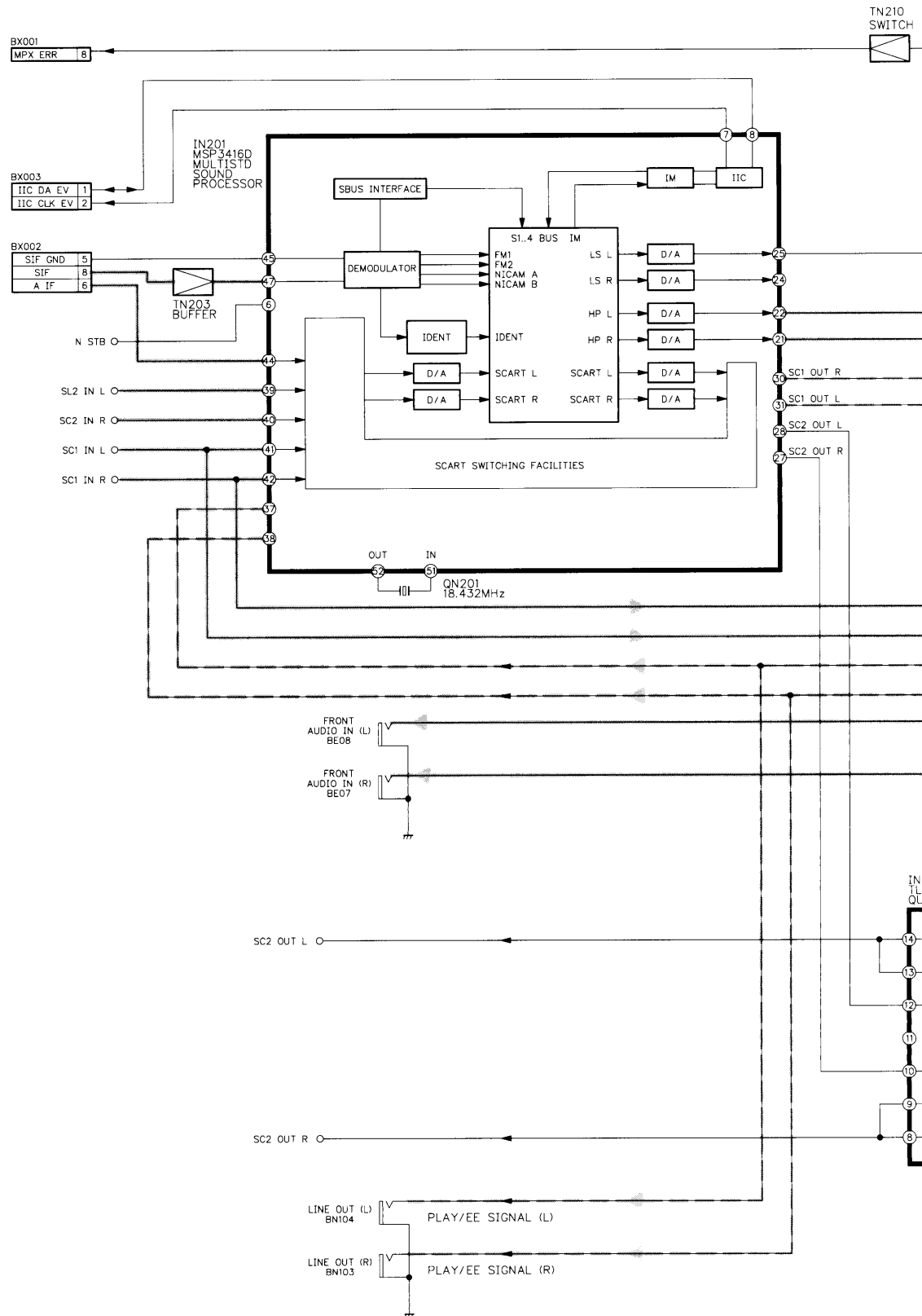
3-26

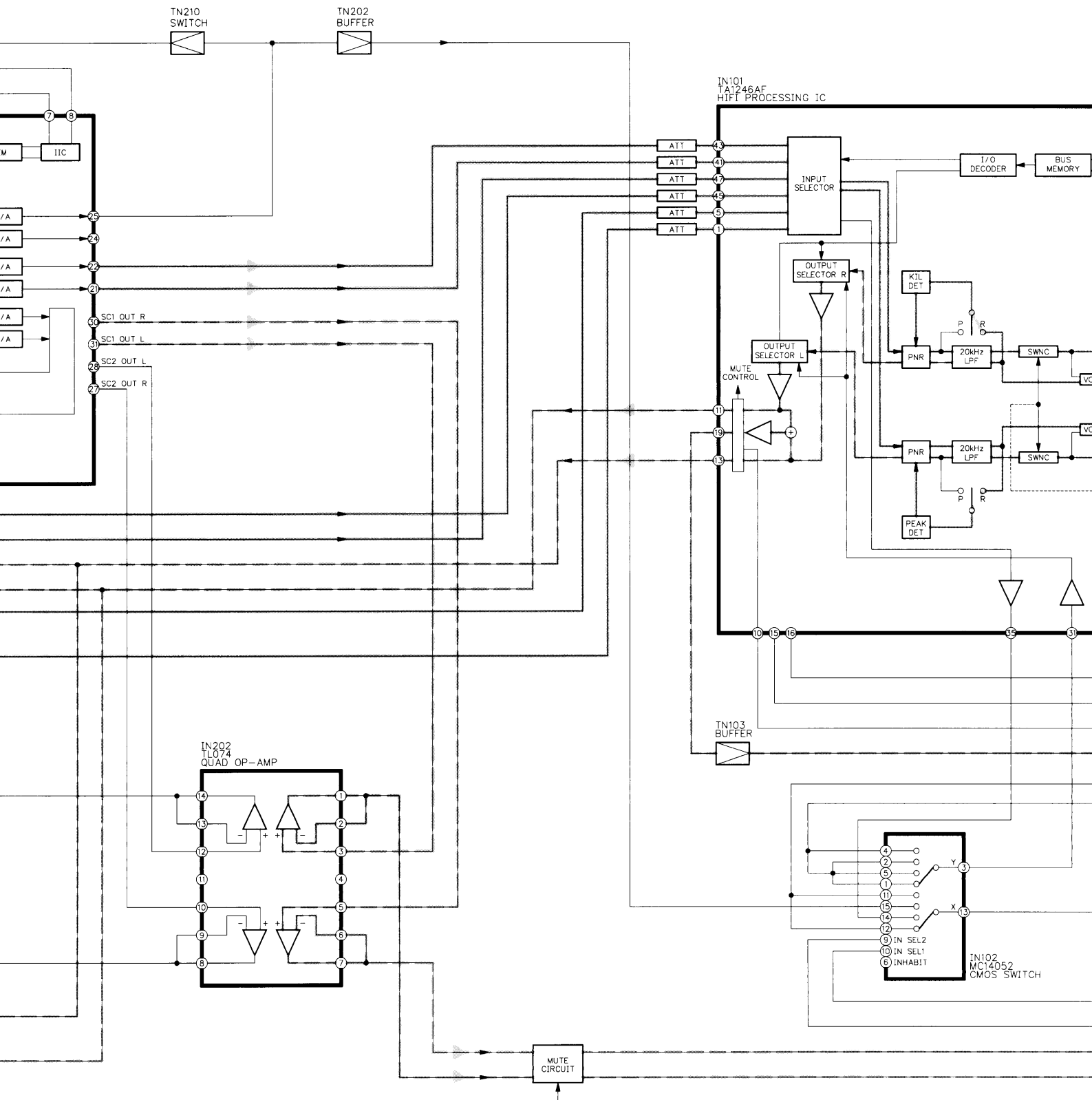
3-27

3-28

## 7-7. Hi-Fi Audio Block Diagram

110-9807





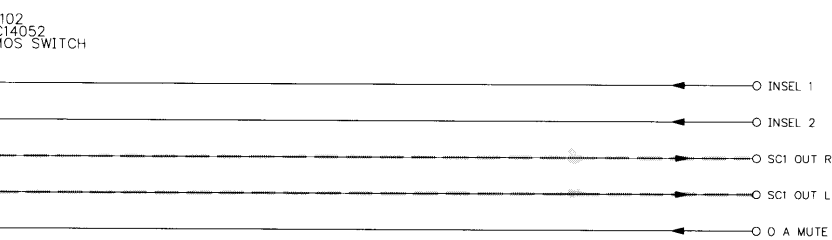
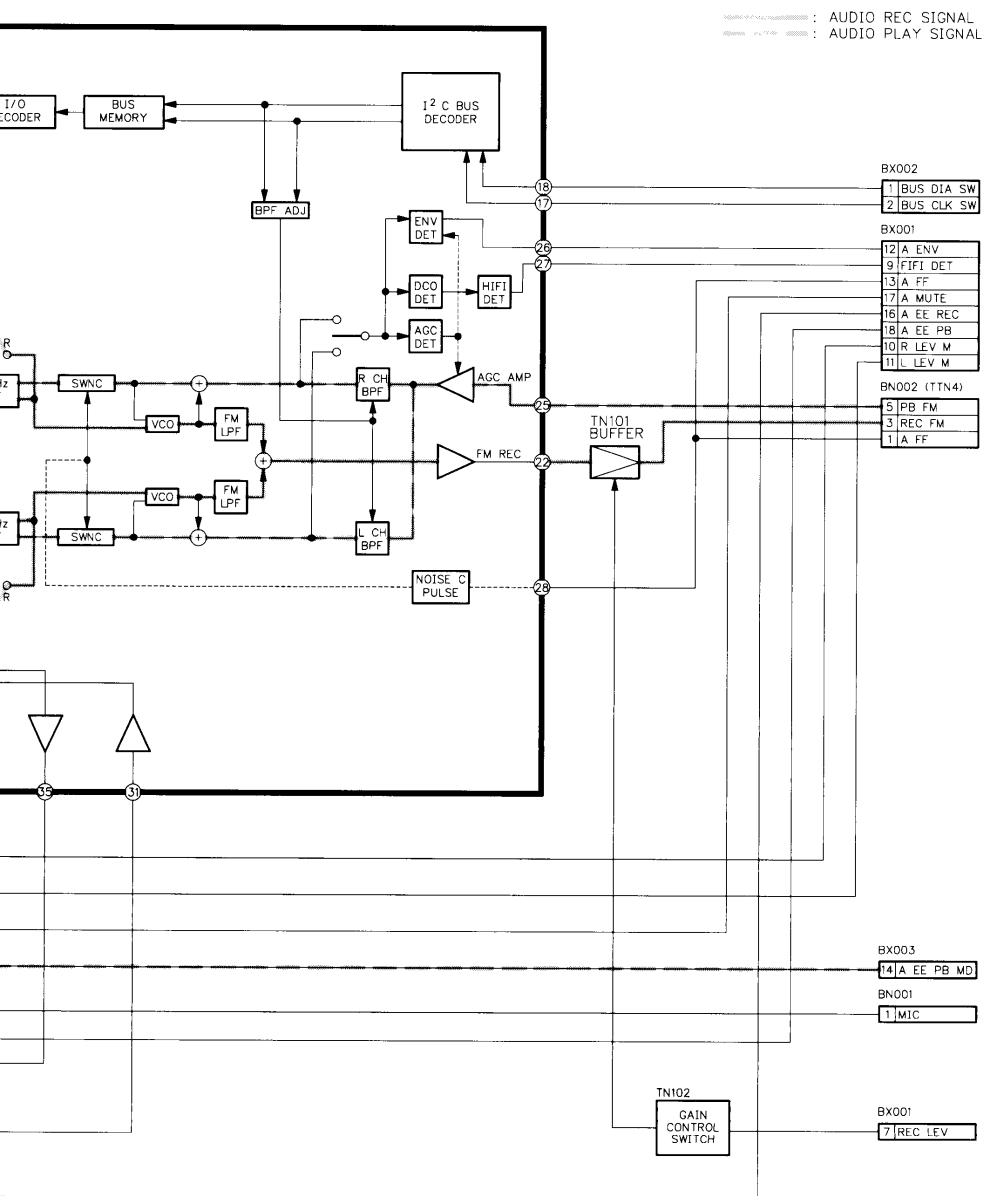


Fig. 3-7-12

### 7-7-1. Hi-Fi Audio Level Chart

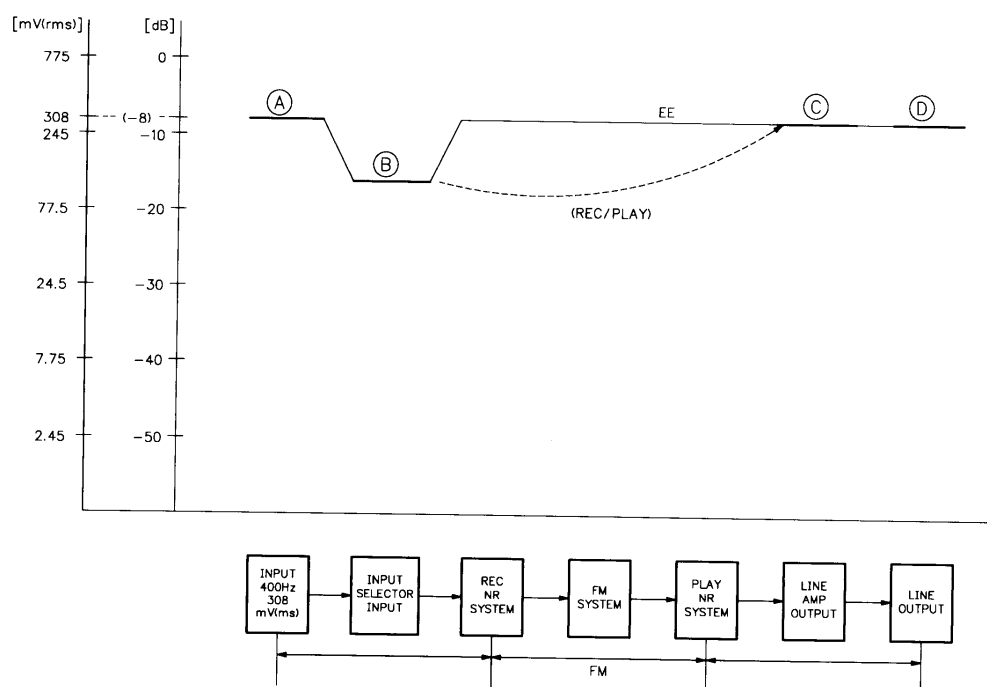


Fig. 3-7-13

8. CIRCUIT DIAGRAMS

8-1. Power Circuit Diagram

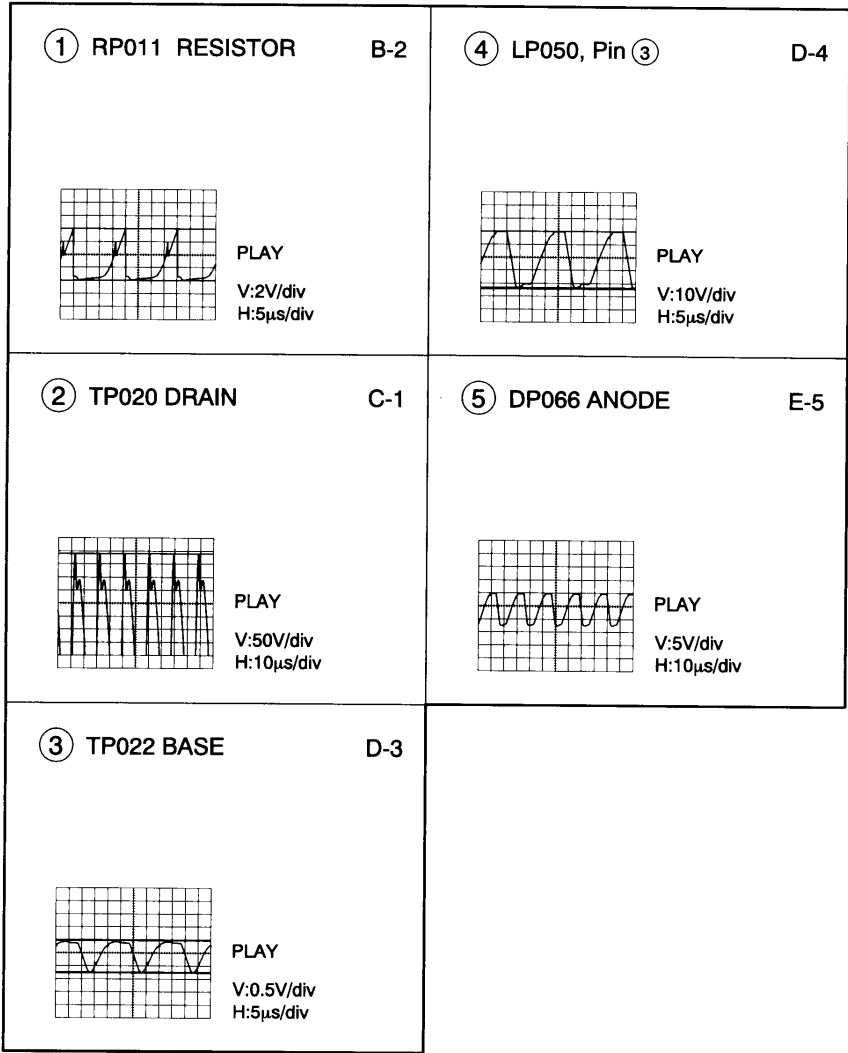
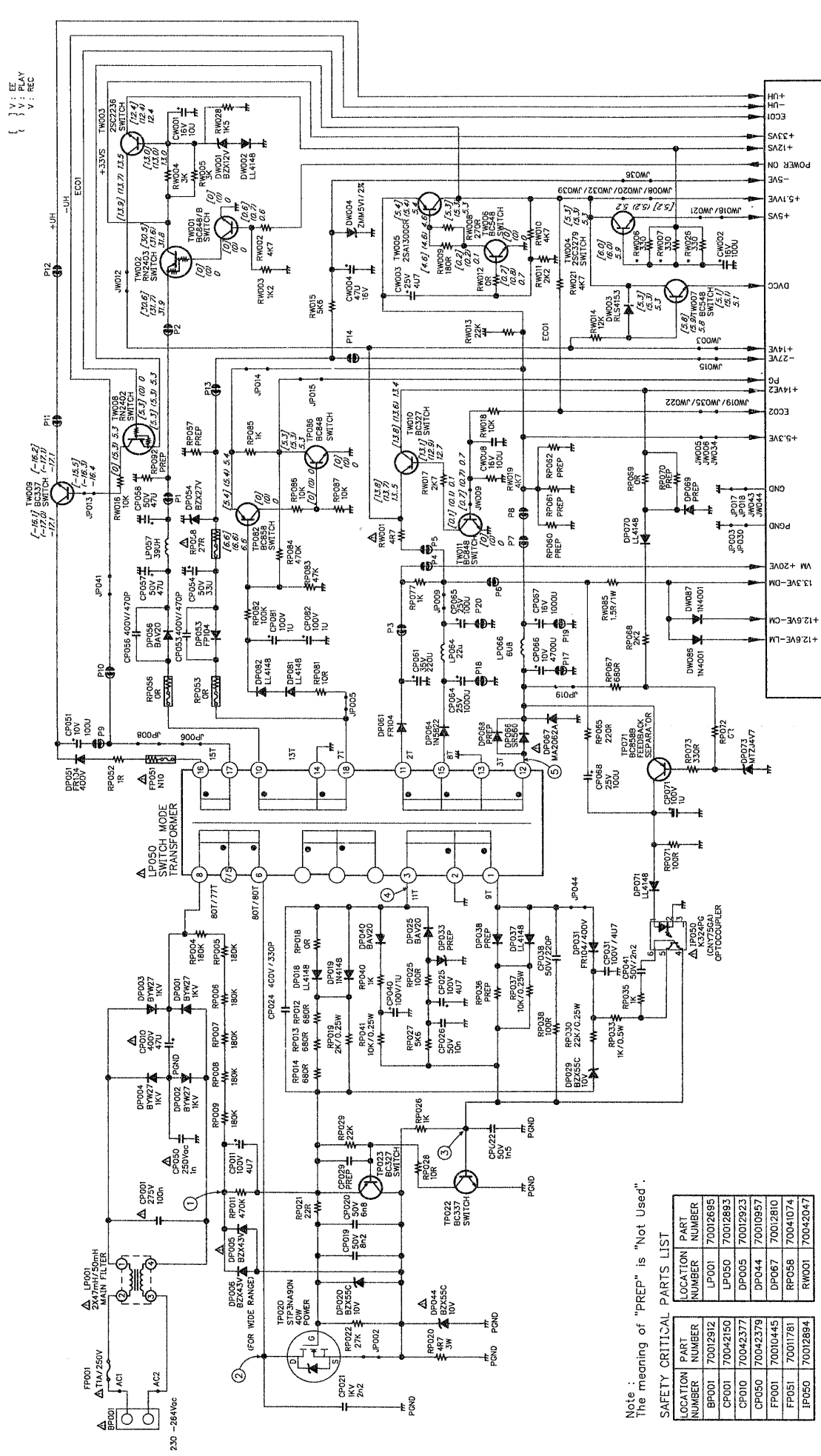


Fig. 3-8-1

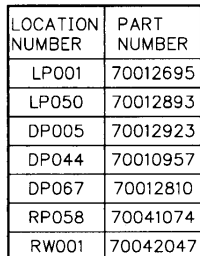


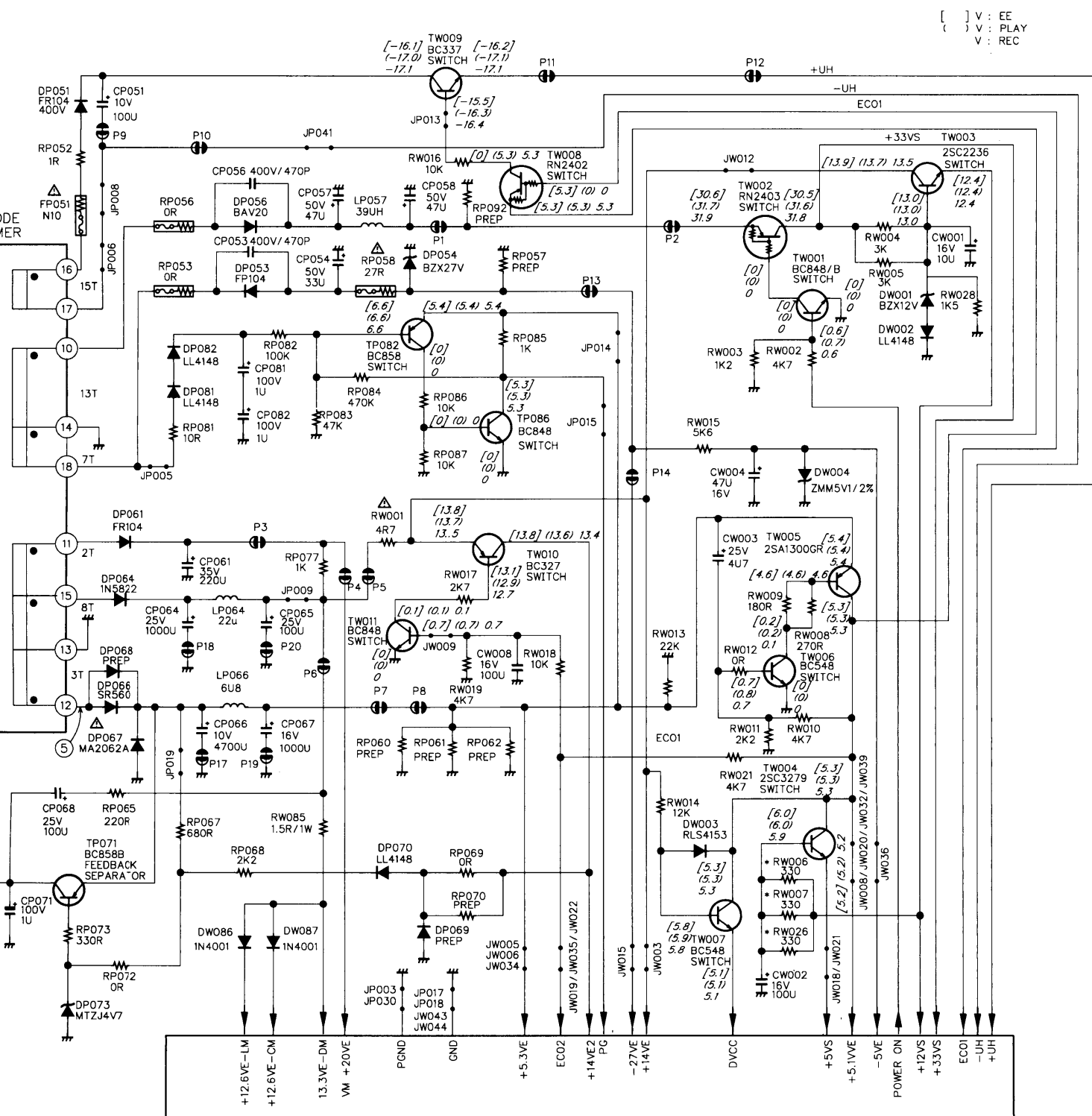
Note :  
The meaning of "PREP" is "Not Used".

SAFETY CRITICAL			PARTS LIST		
LOCATION NUMBER	PART NUMBER		LOCATION NUMBER	PART NUMBER	
BP001	70012912		LP001	70012695	
CP001	70042150		LP050	70012693	
CP010	70042377		DP005	70012923	
CP050	70042379		DP044	70010957	
FP001	70010445		DP067	70012810	
FP051	7001781		DP058	70041074	
IP050	70012894		RW001	70042407	

**Fig. 3-8-2**

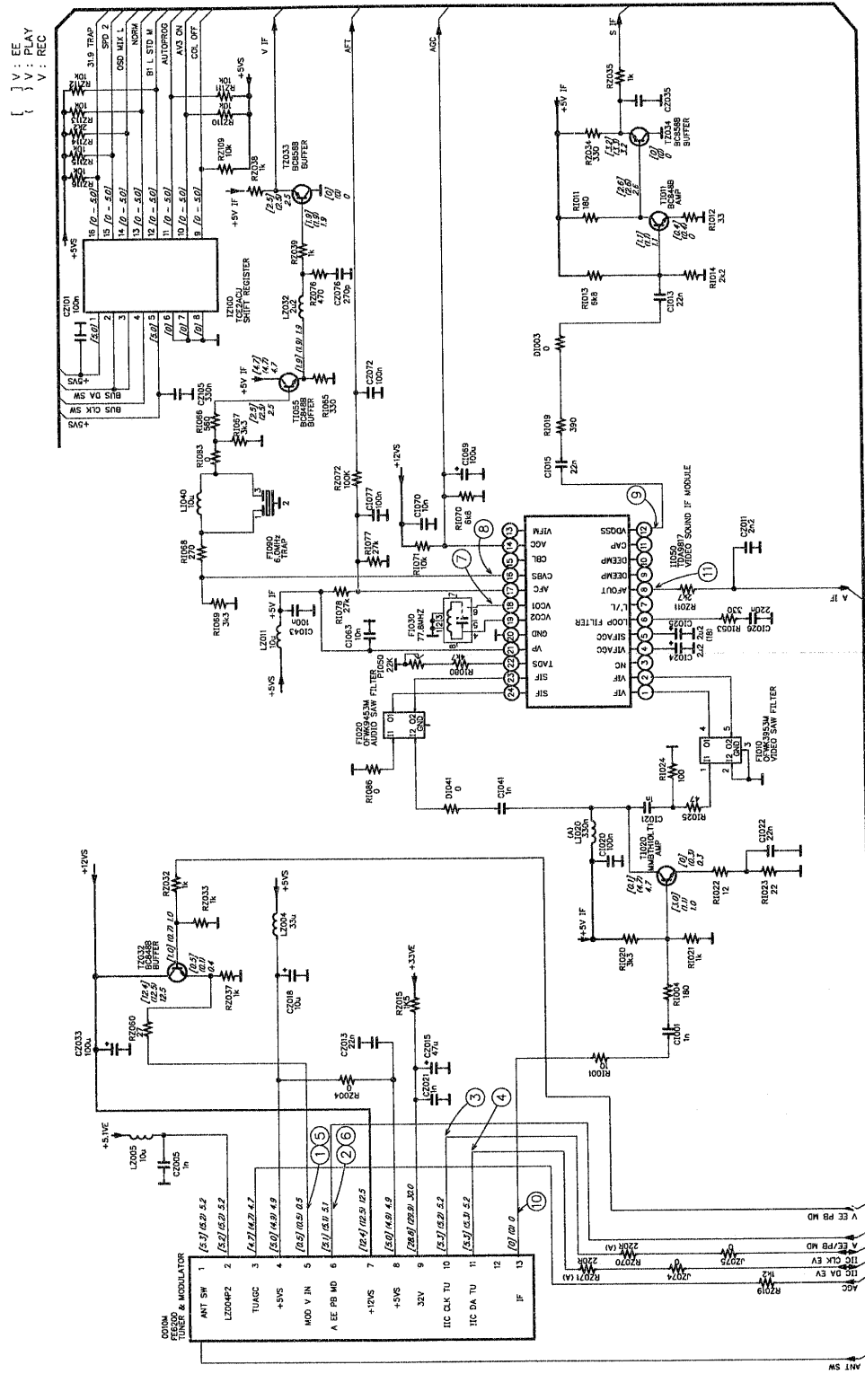
# G





**Fig. 3-8-2**

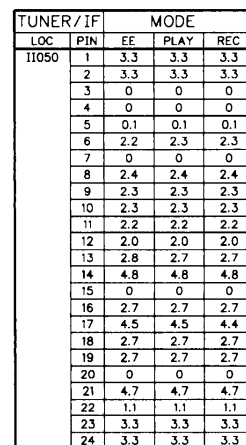
8-2. PIF Circuit Diagram



TUNER/AF	MODE	
LOC	FIN	EE
1	3.3	3.3
2	3.3	3.3
3	0	0
4	0	0
5	0.1	0.1
6	2.2	2.2
7	0	0
8	2.2	2.2
9	2.2	2.2
10	2.2	2.2
11	2.2	2.2
12	2.2	2.2
13	2.2	2.2
14	4.8	4.8
15	0	0
16	2.7	2.7
17	4.8	4.8
18	2.7	2.7
19	2.7	2.7
20	0	0
21	4.7	4.7
22	3.3	3.3
23	3.3	3.3
24	3.3	3.3

# G





3-34

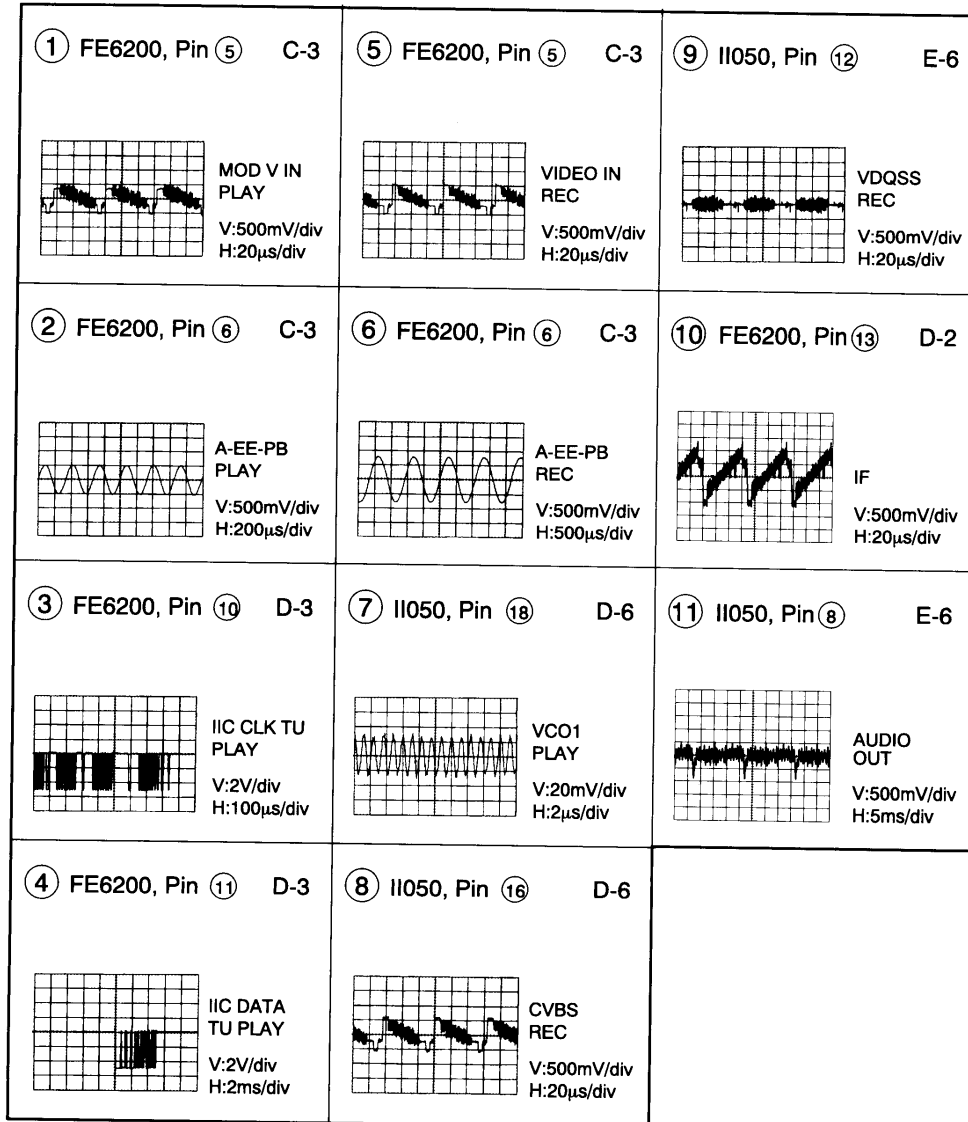


Fig. 3-8-4

## 8-3. KDB Circuit Diagram

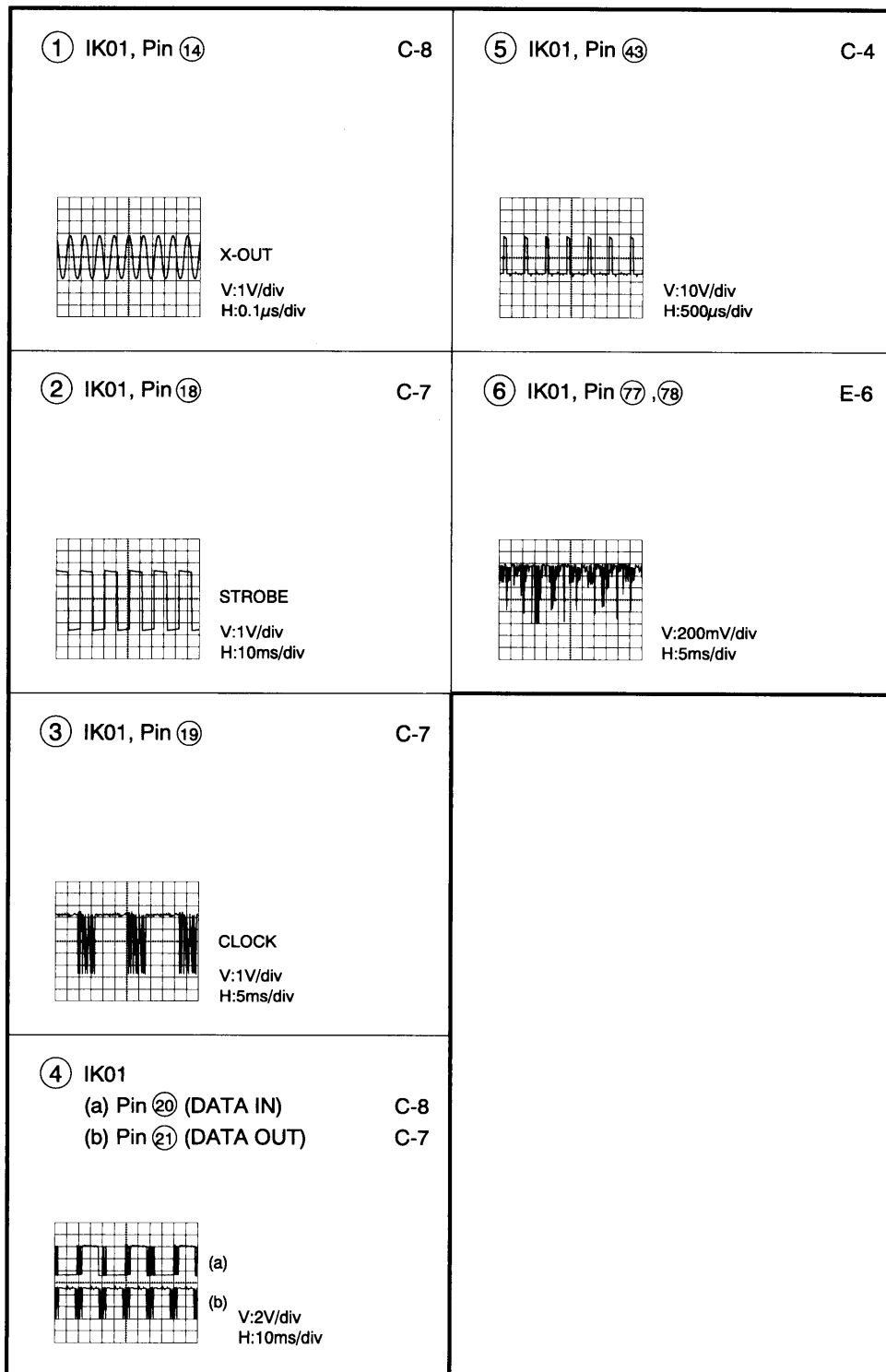


Fig. 3-8-5



1

2

3

4

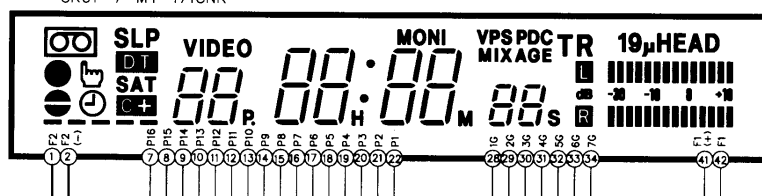
5

KDB  
SERVO/  
LOGICKD  
SERVO/  
LOGIC

A

## 0210M KDB

GK01 7-MT-171GNK



B

C

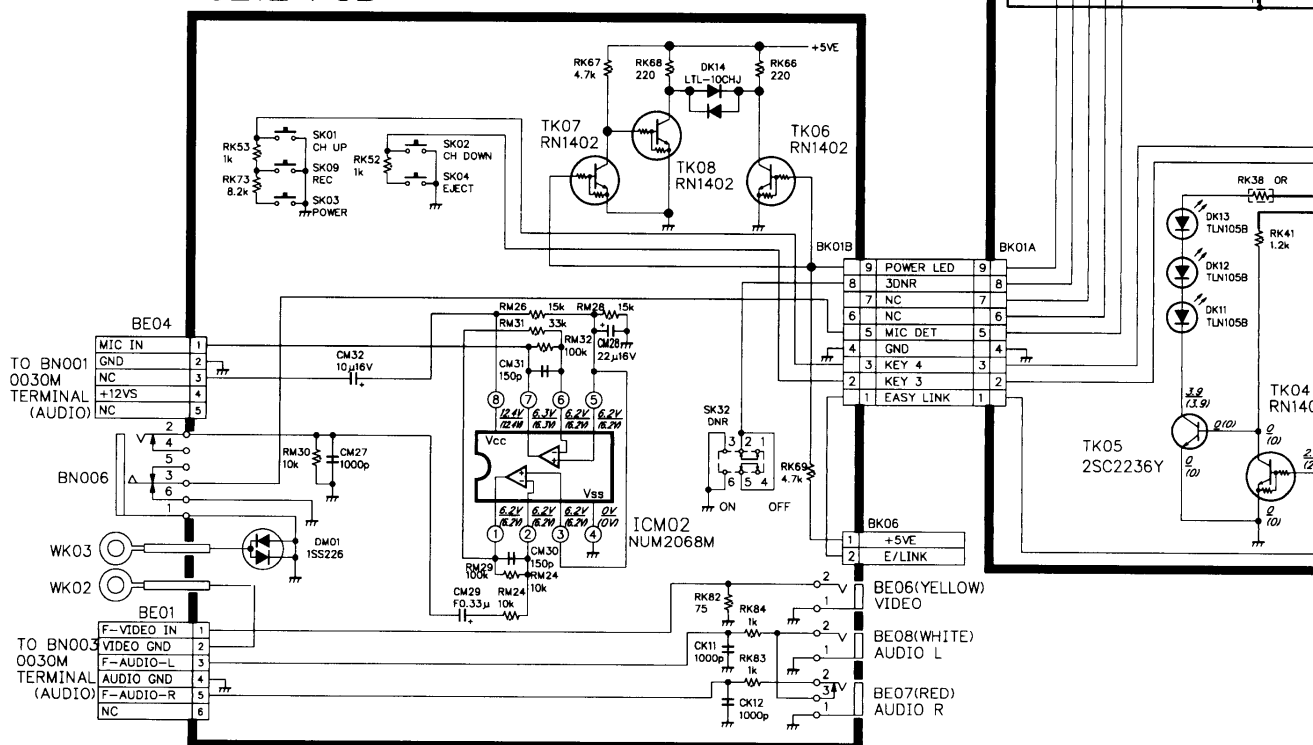
D

E

F

G

## 0212 FCB



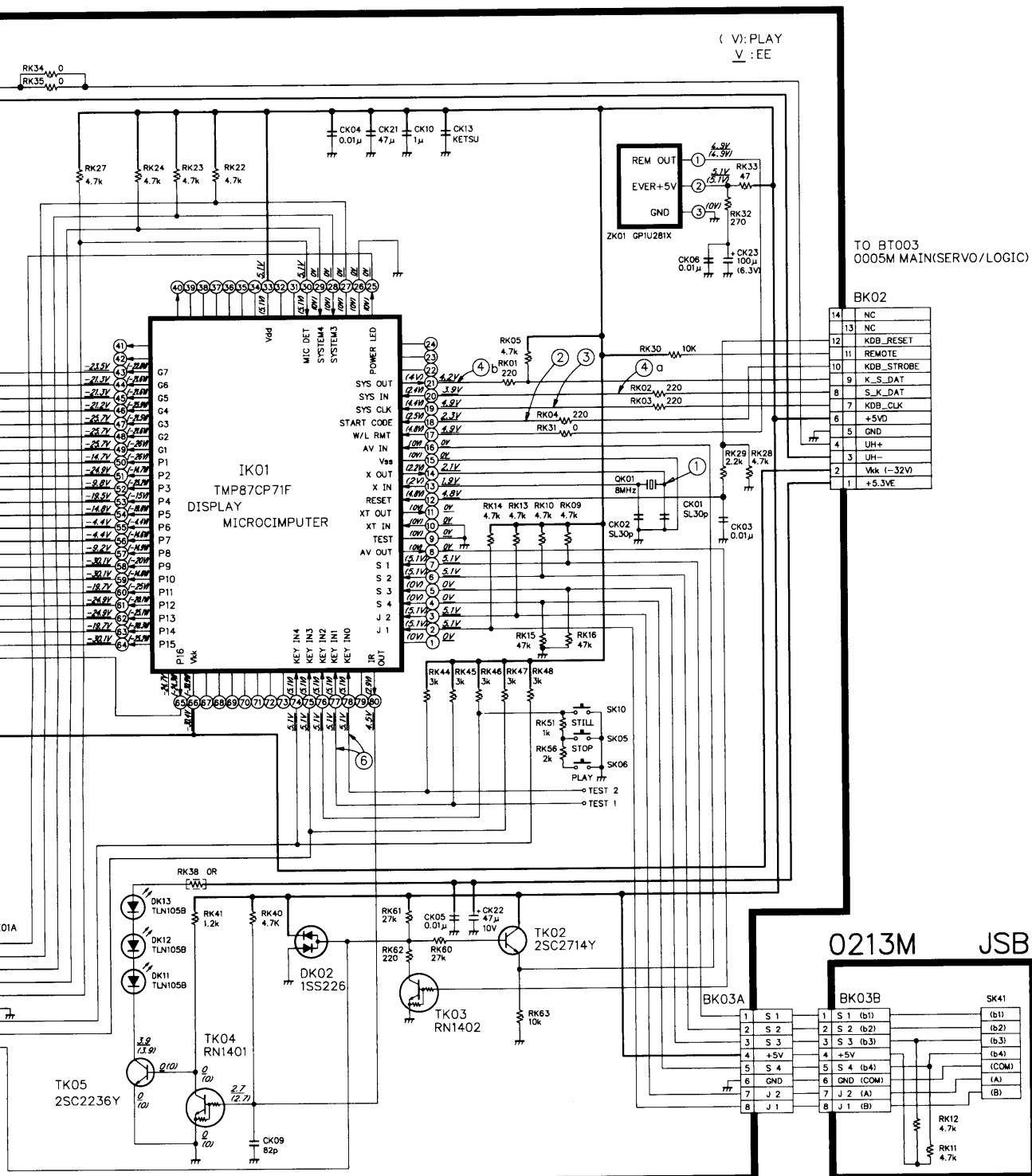


Fig. 3-8-6

# 8-4. Servo/Logic Circuit Diagram

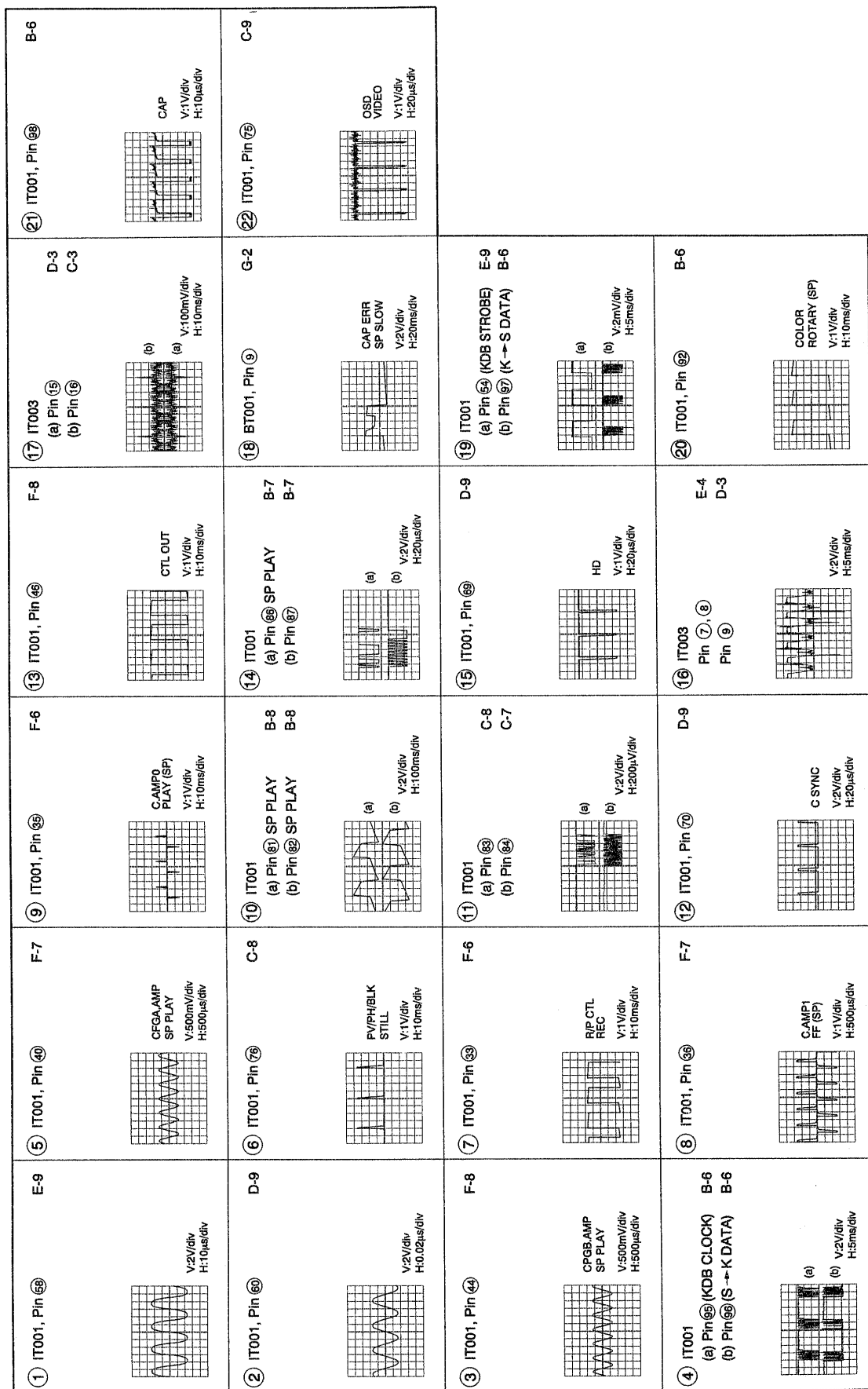
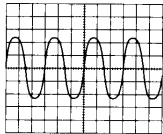
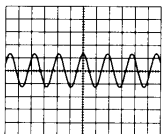
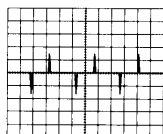
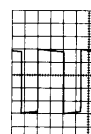
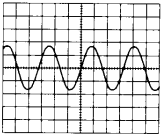

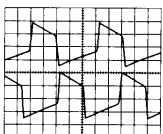

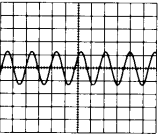
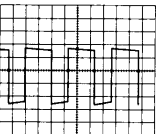
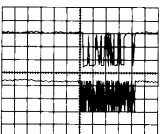
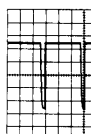
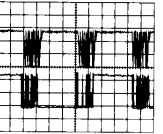
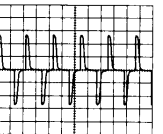

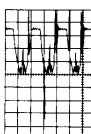


Fig. 3-8-7

8-4. Servo/Logic Circuit Diagram

<div>① IT001, Pin ⑤⑧</div> <div>E-9</div> <div><div>V:2V/div H:10μs/div</div></div>	<div>⑤ IT001, Pin ④⑩</div> <div>F-7</div> <div><div>CFGA,AMP SP PLAY V:500mV/div H:500μs/div</div></div>	<div>⑨ IT001, Pin ③⑤</div> <div>F-6</div> <div><div>C.AMP0 PLAY (SP) V:1V/div H:10ms/div</div></div>	<div>⑬ IT001, Pin ⑦⑩</div> <div></div> <div></div>
<div>② IT001, Pin ⑥⑩</div> <div>D-9</div> <div><div>V:2V/div H:0.02μs/div</div></div>	<div>⑥ IT001, Pin ⑦⑥</div> <div>C-8</div> <div><div>PV/PH/BLK STILL V:1V/div H:10ms/div</div></div>	<div>⑩ IT001 (a) Pin ⑧① SP PLAY (b) Pin ⑧② SP PLAY</div> <div>B-8 B-8</div> <div><div>(a) (b) V:2V/div H:100ms/div</div></div>	<div>⑭ IT001, Pin ⑦⑩</div> <div></div> <div></div>
<div>③ IT001, Pin ④④</div> <div>F-8</div> <div><div>CPGB,AMP SP PLAY V:500mV/div H:500μs/div</div></div>	<div>⑦ IT001, Pin ③③</div> <div>F-6</div> <div><div>R/P CTL REC V:1V/div H:10ms/div</div></div>	<div>⑪ IT001 (a) Pin ⑧③ (b) Pin ⑧④</div> <div>C-8 C-7</div> <div><div>(a) (b) V:2V/div H:200μV/div</div></div>	<div>⑮ IT001, Pin ⑦⑩</div> <div></div> <div></div>
<div>④ IT001 (a) Pin ⑨⑤ (KDB CLOCK) (b) Pin ⑨⑥ (S → K DATA)</div> <div>B-6 B-6</div> <div><div>(a) (b) V:2V/div H:5ms/div</div></div>	<div>⑧ IT001, Pin ③⑥</div> <div>F-7</div> <div><div>C.AMP1 FF (SP) V:1V/div H:500μs/div</div></div>	<div>⑫ IT001, Pin ⑦⑩</div> <div>D-9</div> <div><div>C SYNC V:2V/div H:20μs/div</div></div>	<div>⑯ IT001, Pin ⑦⑩</div> <div></div> <div></div>

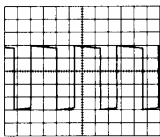
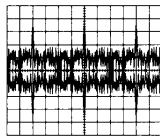
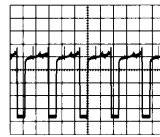
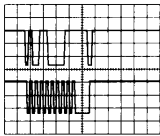
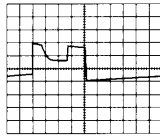
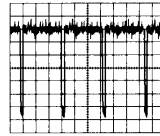
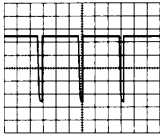
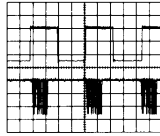
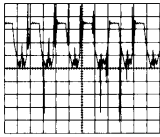
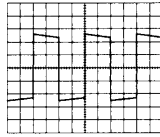
<p>C.AMP0 PLAY (SP) V:1V/div H:10ms/div</p>	<p>F-6 ⑬ IT001, Pin ④⑥ F-8</p>  <p>CTL OUT V:1V/div H:10ms/div</p>	<p>⑰ IT003 (a) Pin ⑮ D-3 (b) Pin ⑯ C-3</p>  <p>(b) (a) V:100mV/div H:10ms/div</p>	<p>⑳ IT001, Pin ⑨⑧ B-6</p>  <p>CAP V:1V/div H:10μs/div</p>
<p>PLAY B-8 PLAY B-8</p> <p>a) b) V:2V/div H:100ms/div</p>	<p>⑭ IT001 (a) Pin ⑧⑥ SP PLAY B-7 (b) Pin ⑧⑦ B-7</p>  <p>(a) (b) V:2V/div H:20μs/div</p>	<p>⑱ BT001, Pin ⑨ G-2</p>  <p>CAP ERR SP SLOW V:2V/div H:20ms/div</p>	<p>㉑ IT001, Pin ⑦⑤ C-9</p>  <p>OSD VIDEO V:1V/div H:20μs/div</p>
<p>C-8 C-7</p> <p>a) b) V:2V/div H:200μV/div</p>	<p>⑮ IT001, Pin ⑥⑨ D-9</p>  <p>HD V:1V/div H:20μs/div</p>	<p>⑲ IT001 (a) Pin ⑤④ (KDB STROBE) E-9 (b) Pin ⑨⑦ (K→S DATA) B-6</p>  <p>(a) (b) V:2mV/div H:5ms/div</p>	
<p>D-9</p> <p>C SYNC V:2V/div H:20μs/div</p>	<p>⑯ IT003 Pin ⑦, ⑧ E-4 Pin ⑨ D-3</p>  <p>V:2V/div H:5ms/div</p>	<p>㉒ IT001, Pin ⑨② B-6</p>  <p>COLOR ROTARY (SP) V:1V/div H:10ms/div</p>	

Fig. 3-8-7



$$110-9807$$

I/O

TUNER

## VIDEO

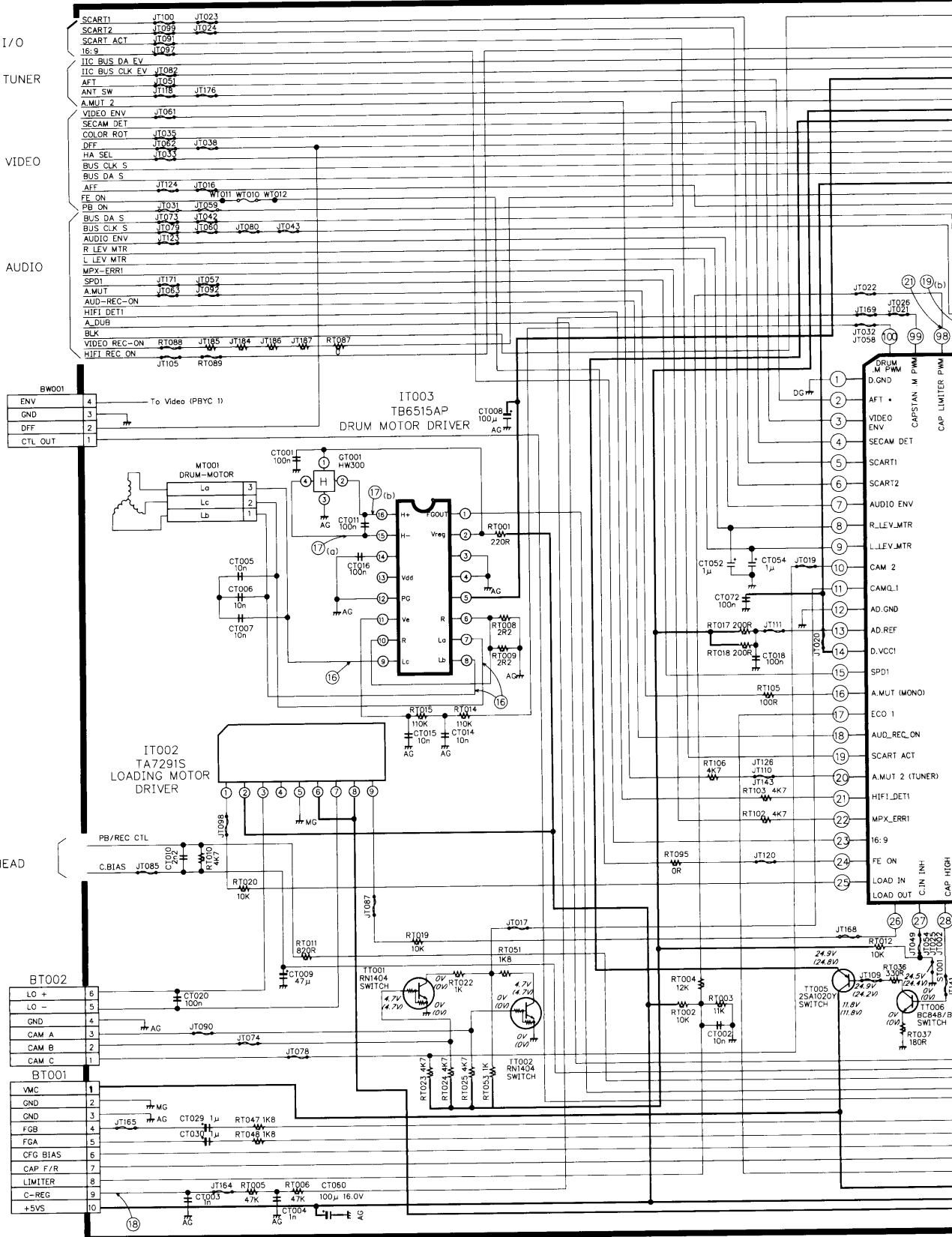
AUDIO

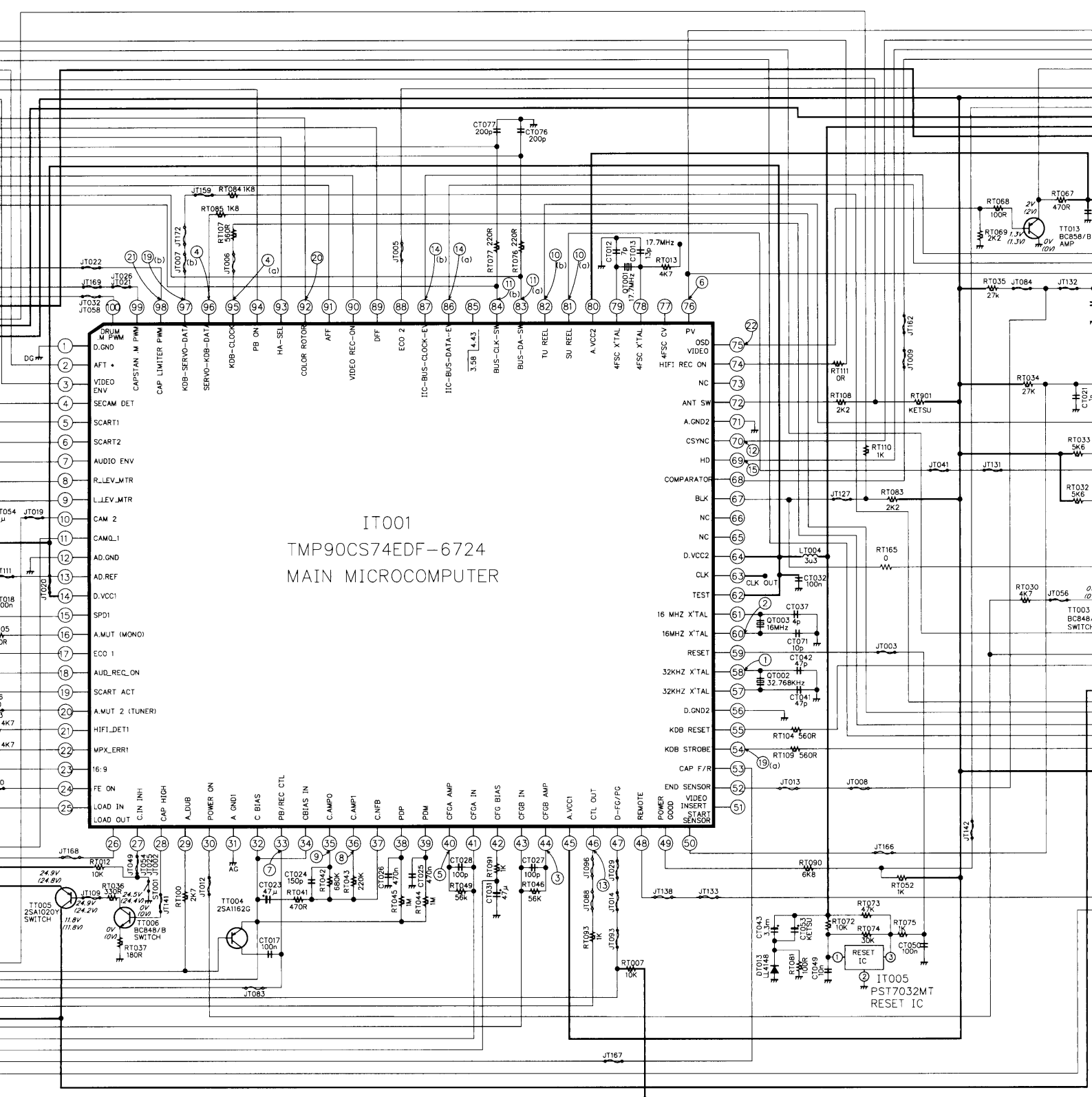
ENV
GND
DFF
CTL OUT

AUDIO  
ACE HEAD

TO  
MECHADECK

TO  
CAPSTAN  
MOTOR





10

11

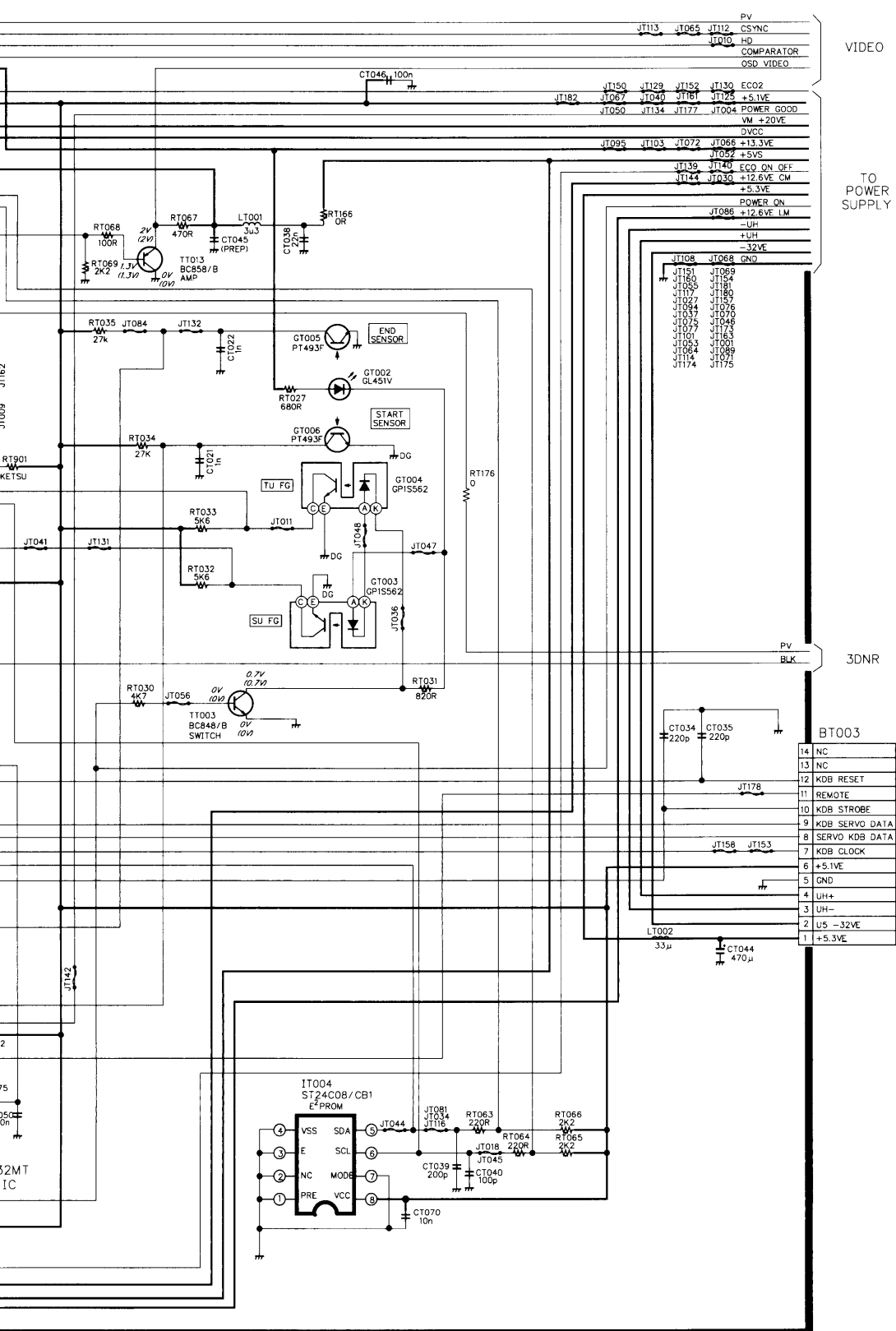
12

13

14

15

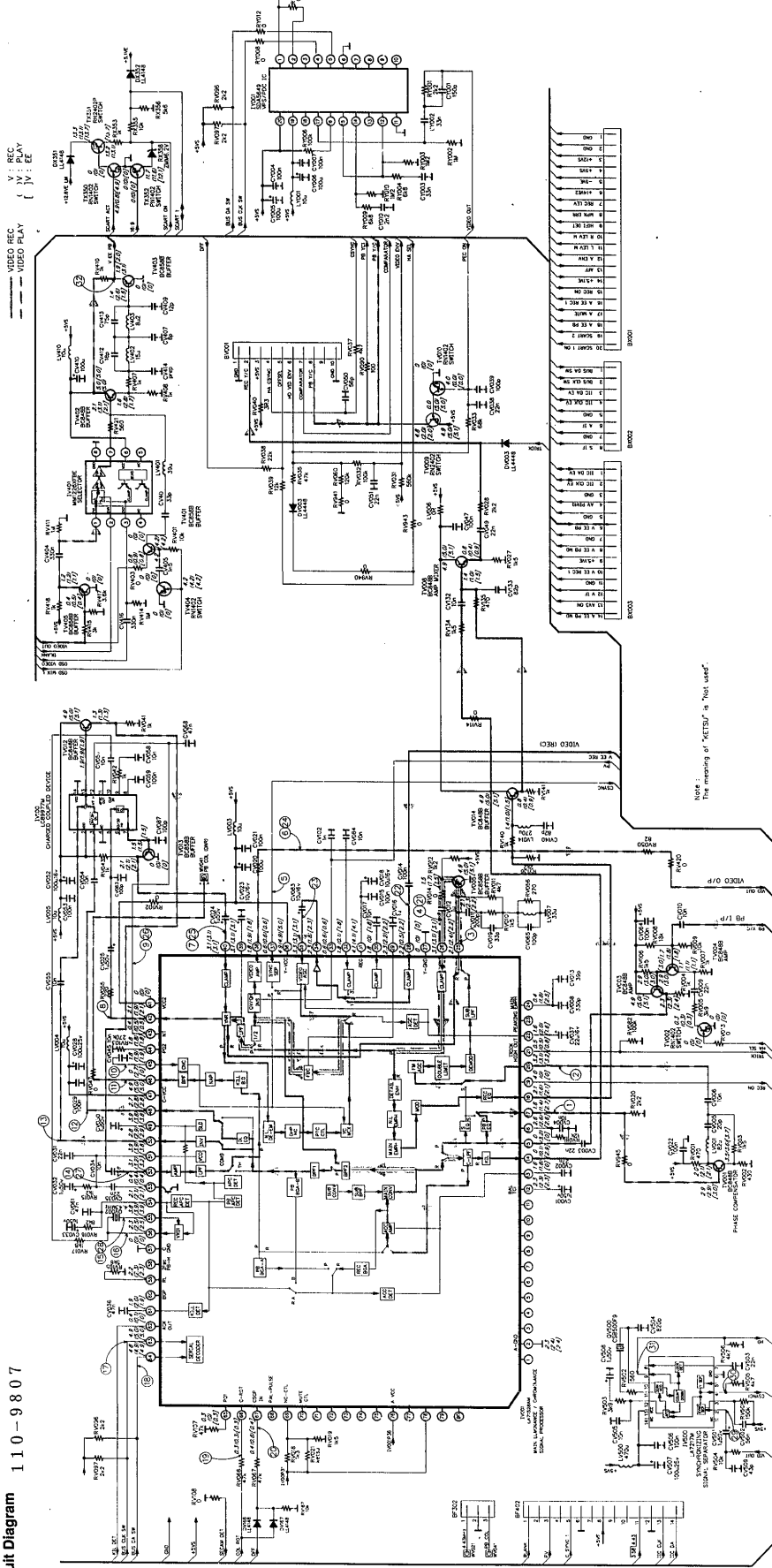
V : REC  
( V : PLAY



SERVO	LOC	PIN	MODE	SERVO	LOC	PIN	MODE
IT001	1	0	0	IT002	1	4.8	4.7
	2	0.4	0.4		2	5.1	5.1
	3	2.4	0.6		3	0.5	0.5
	4	3.3	3.4		4	0	0
	5	0	4.6		5	0	0
	6	0	0		6	12.6	12.6
	7	5.1	5		7	0.5	0.5
	8	0	0.8		8	12.6	12.6
	9	0	0.9		9	4.7	4.7
	10	0	0	IT003	1	1.3	1.4
	11	2	2		2	1.4	1.4
	12	0	0		3	0	0
	13	5.1	5.1		4	0	0
	14	5	4.9		5	13.3	13.3
	15	0	0		6	0	0
	16	4.9	0		7	10	10
	17	0	0		8	10	10
	18	0	0		9	10	10
	19	5	5		10	0	0
	20	0	0		11	2.6	2.7
	21	0	0		12	0	0
	22	0	0		13	5	5
	23	0	5		14	3.2	3.2
	24	5.1	5.1		15	0.6	0.6
	25	5	5		16	0.8	0.8
	26	5	5	IT004	1	0	0
	27	0	0		2	0	0
	28	0	0		3	0	0
	29	0	4.9		4	0	0
	30	4.8	4.8		5	4.7	4.7
	31	0	0		6	4.9	4.8
	32	2.4	2.4		7	0	0
	33	2.8	2.4		8	5.1	5.1
	34	2.4	2.4		9	0	0
	35	2.4	2.4		10	0	0
	36	2.4	2.4		11	0	0
	37	2.4	2.5		12	0	0
	38	2.5	2.5		13	5	5
	39	2.5	2.4		14	3.2	3.2
	40	2.5	2.5		15	0.6	0.6
	41	2.5	2.5		16	0.8	0.8
	42	2.5	2.5	IT005	1	5	5
	43	2.5	2.5		2	0	0
	44	2.5	2.5		3	0	0
	45	5	5		4	0	0
	46	5	5		5	4.7	4.7
	47	1.4	1.3		6	4.9	4.8
	48	5.1	5.1		7	0	0
	49	5.1	5.1		8	5.1	5.1
	50	5.1	5.1		9	0	0
	51	1.9	2.1		10	0	0
	52	5.1	5.1		11	2.6	2.7
	53	0	0		12	0	0
	54	2.1	2.8		13	5	5
	55	5	5		14	3.2	3.2
	56	0	0		15	0.6	0.6
	57	1.8	1.8		16	0.8	0.8
	58	2.6	2.6	IT006	1	0	0
	59	5	5		2	0	0
	60	2.3	2.3		3	0	0
	61	2	2		4	0	0
	62	4.9	4.9		5	4.7	4.7
	63	1.5	1.5		6	4.9	4.8
	64	5	5		7	0	0
	65	0	0		8	5.1	5.1
	66	0	0		9	0	0
	67	0.6	0		10	0	0
	68	4.6	4.6		11	5	5
	69	4.6	4.6		12	0	0
	70	0.5	0.7		13	5	5

Fig. 3-8-8

8-5. Video Circuit Diagram 110-9807



3-44

3-45

3-46

Fig. 3-8-9

$$110-9807$$




10

11

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13

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15

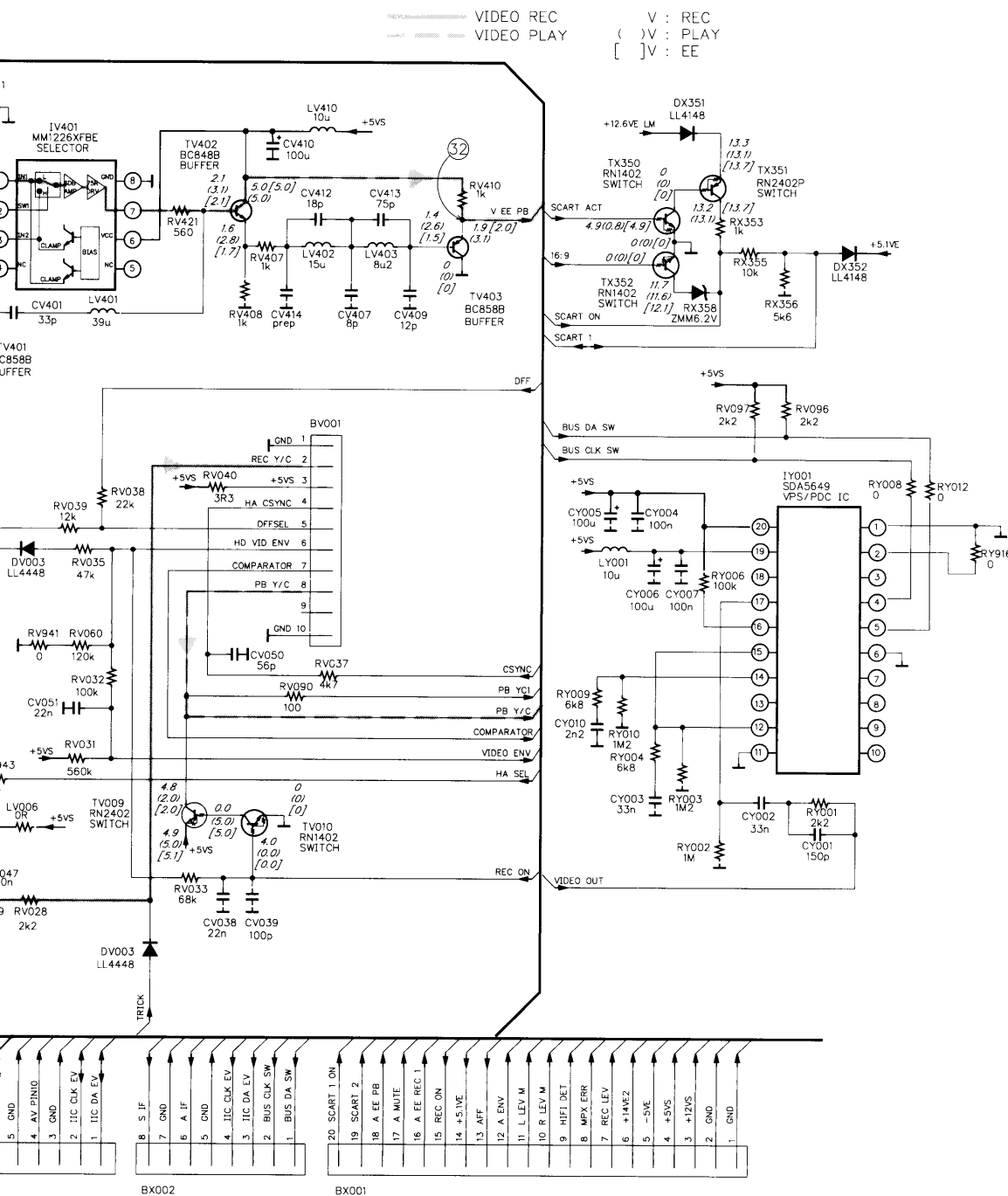


Fig. 3-8-9

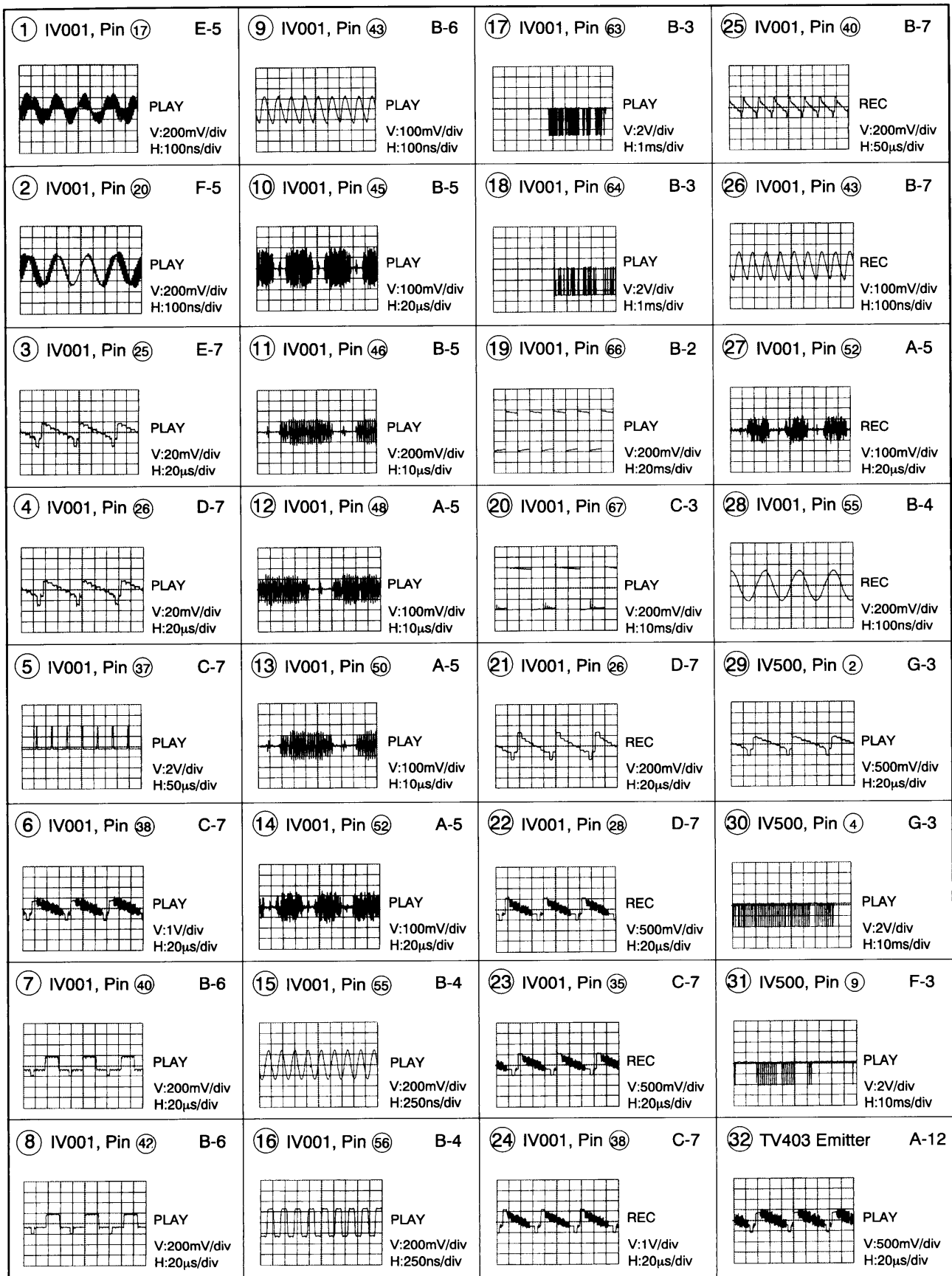


Fig. 3-8-10

## 8-6. Conventional Audio Circuit Diagram

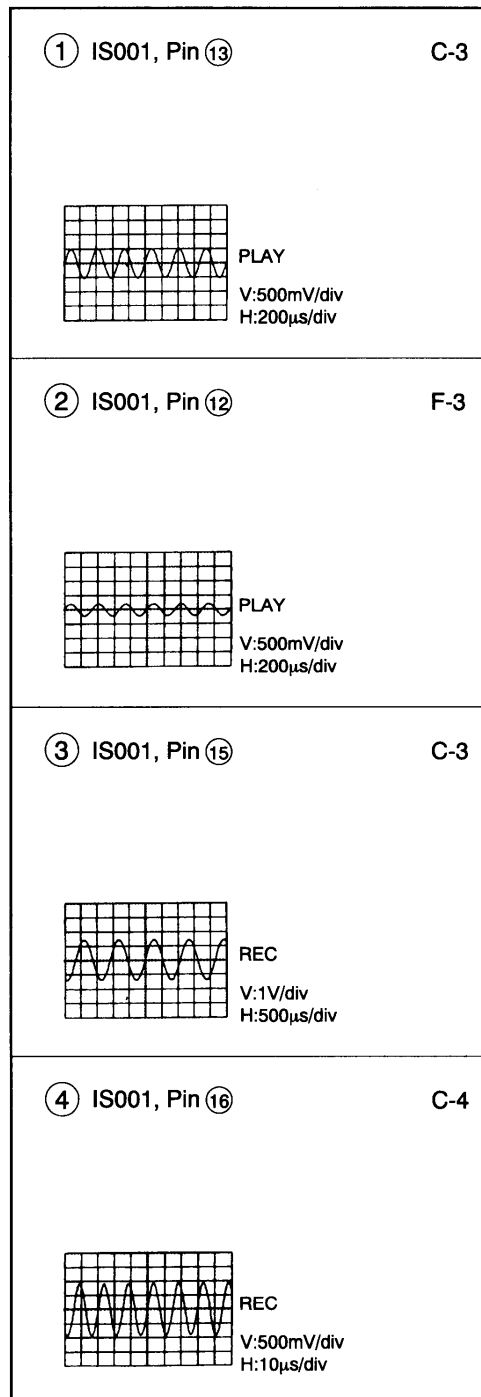


Fig. 3-8-11

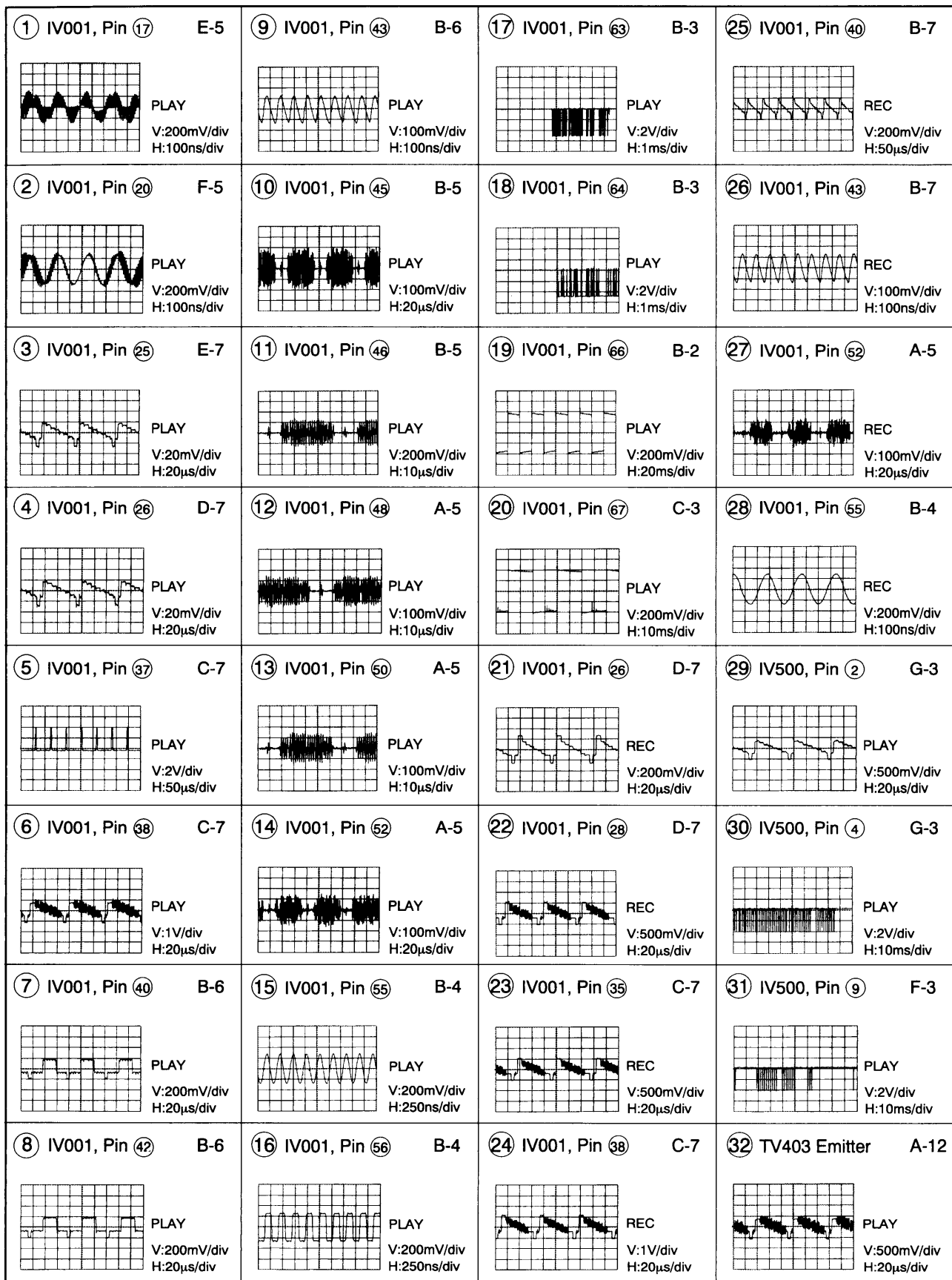


Fig. 3-8-10

## 8-6. Conventional Audio Circuit Diagram

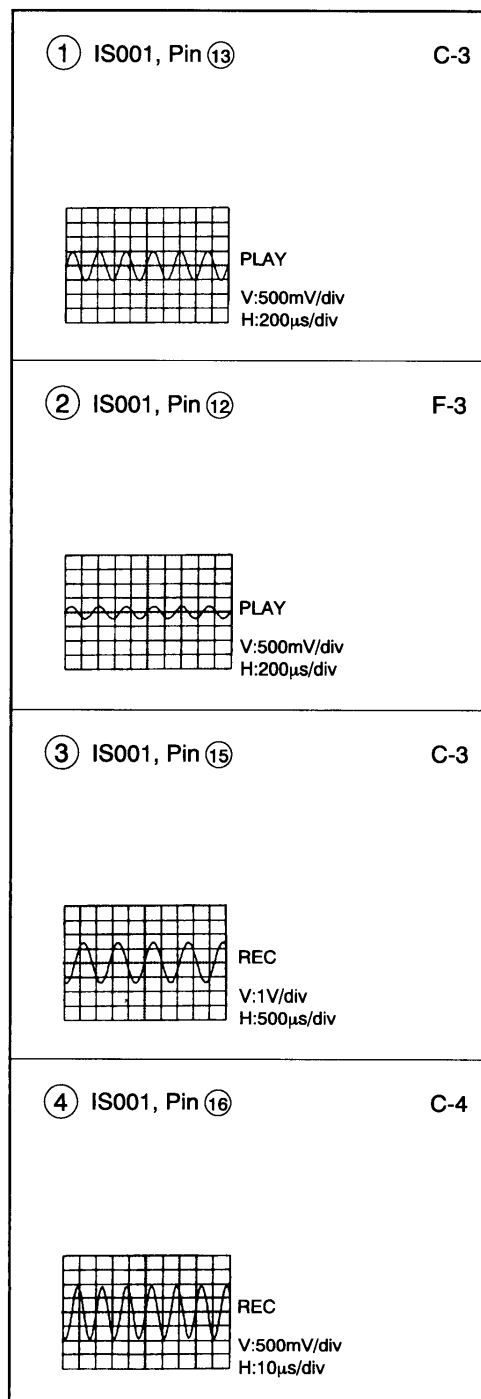
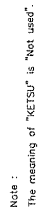


Fig. 3-8-11



3-49

1

2

3

4

5

AUDIO  
3DNRAUDIO  
3DNR

A

B

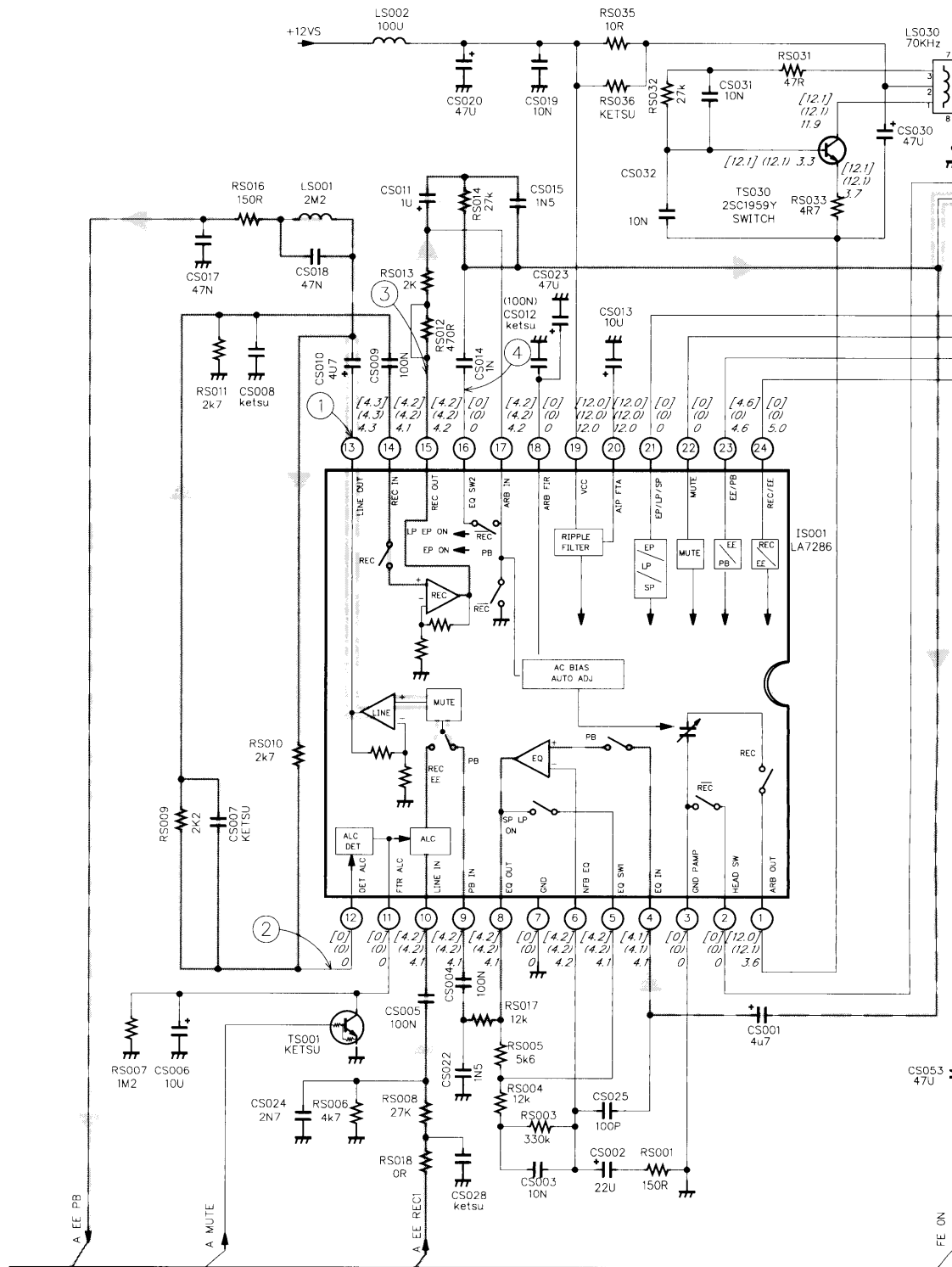
C

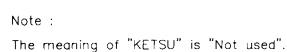
D

E

F

G

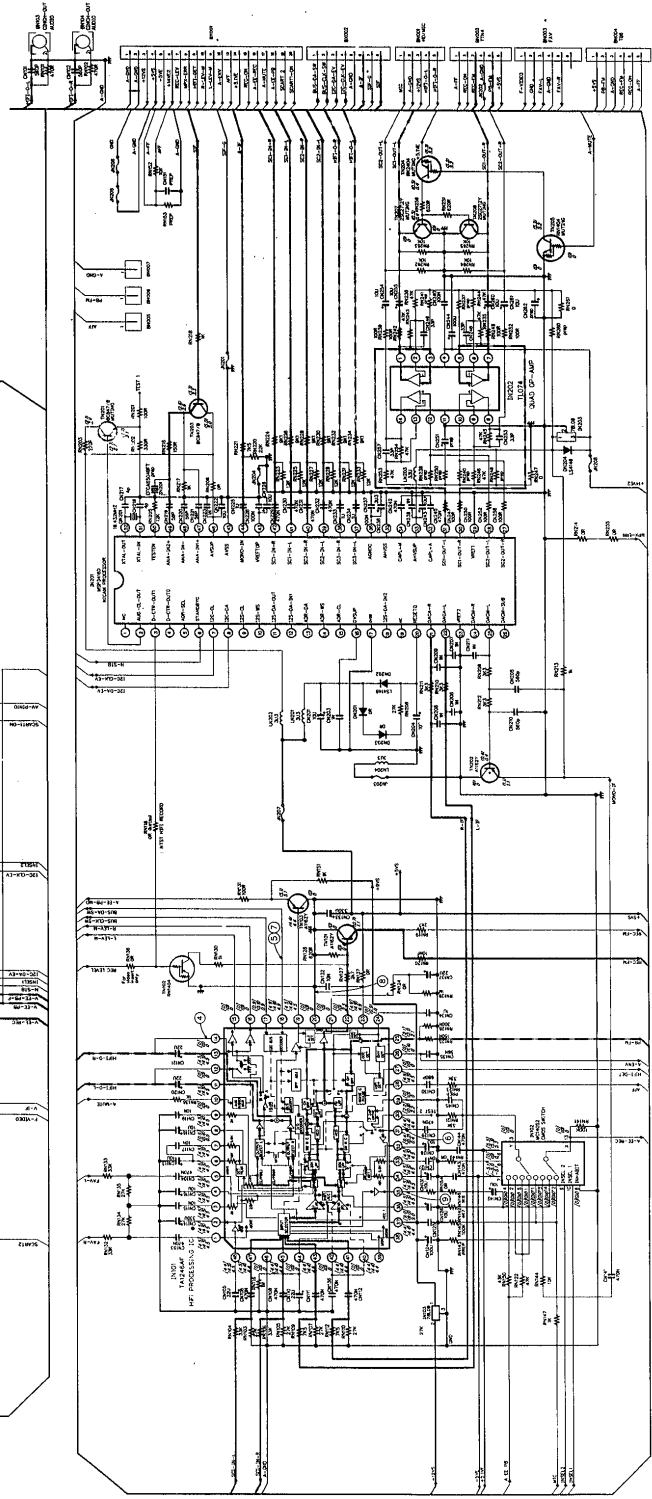
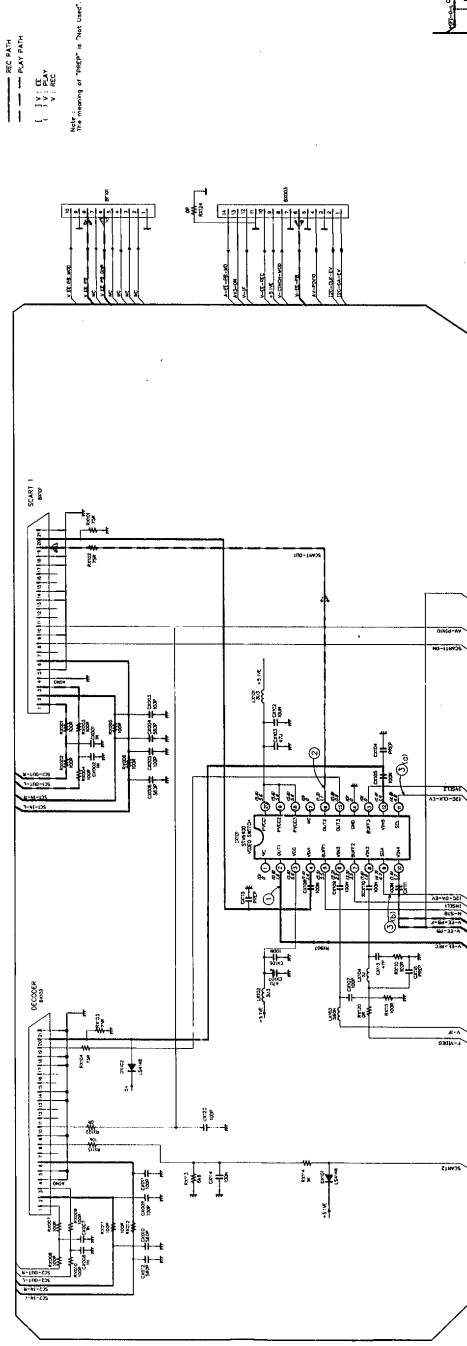




**3-50**

8-8. Terminal/Audio Circuit Diagram

110-9807



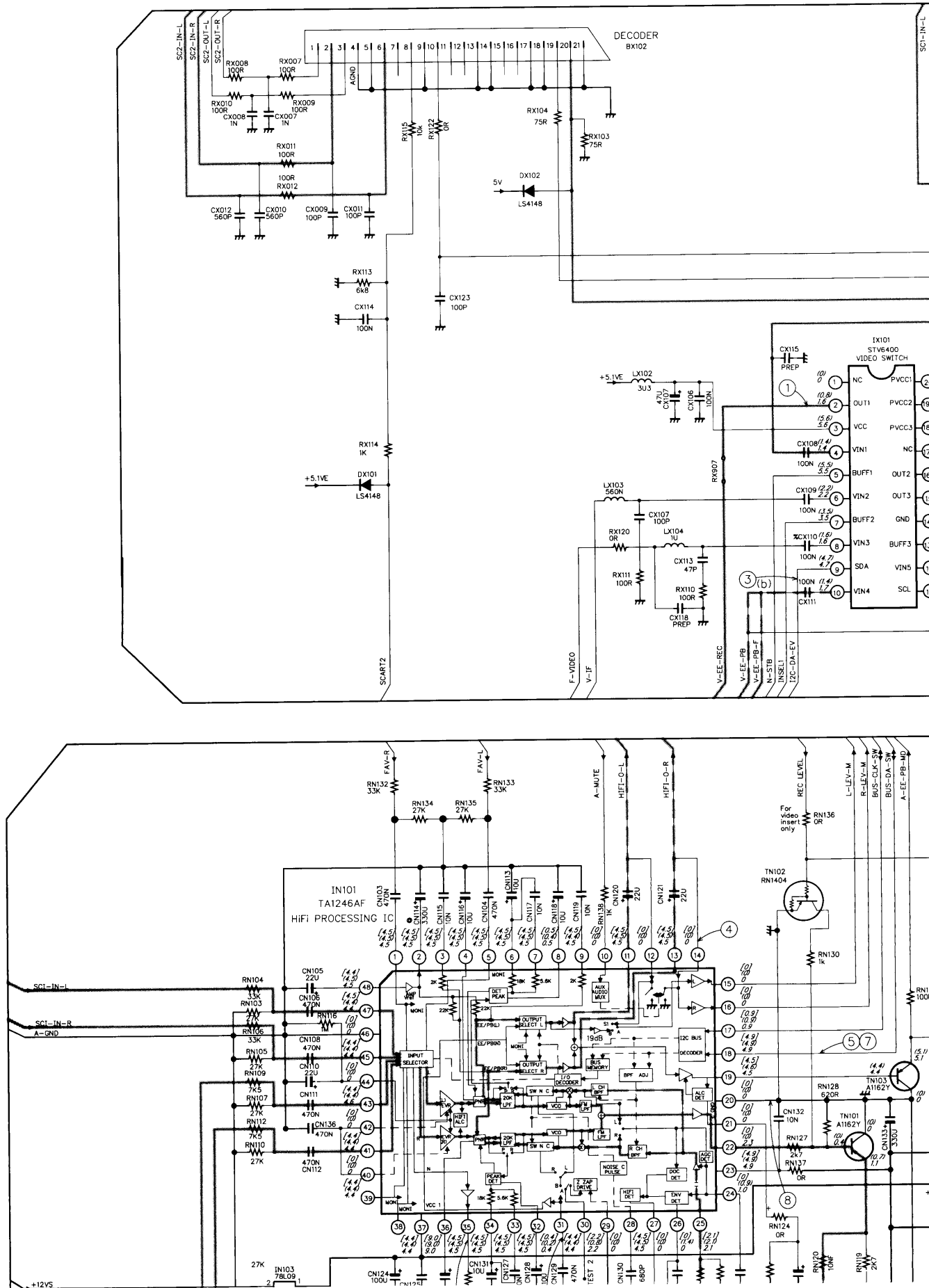
① IX101, Pin ②	C-5	⑤ IN101, Pin ⑤	H-4
			PLAY V200mV H200μs
② IX101, Pin ⑥	D-7	⑦ IN101, Pin ⑥	G-6
			MOD AUDIO V200mV H200μs
③ IX101 (a) Pin ③ (b) Pin ③ (c) Pin ③	E-7 D-5	⑧ IN101, Pin ⑧	H-5
			REC V200mV H200μs
④ IX101, Pin ④	F-5	⑨ IN101, Pin ⑨	H-4
			REC V200mV H200μs
⑤ IN101, Pin ⑤	G-6		

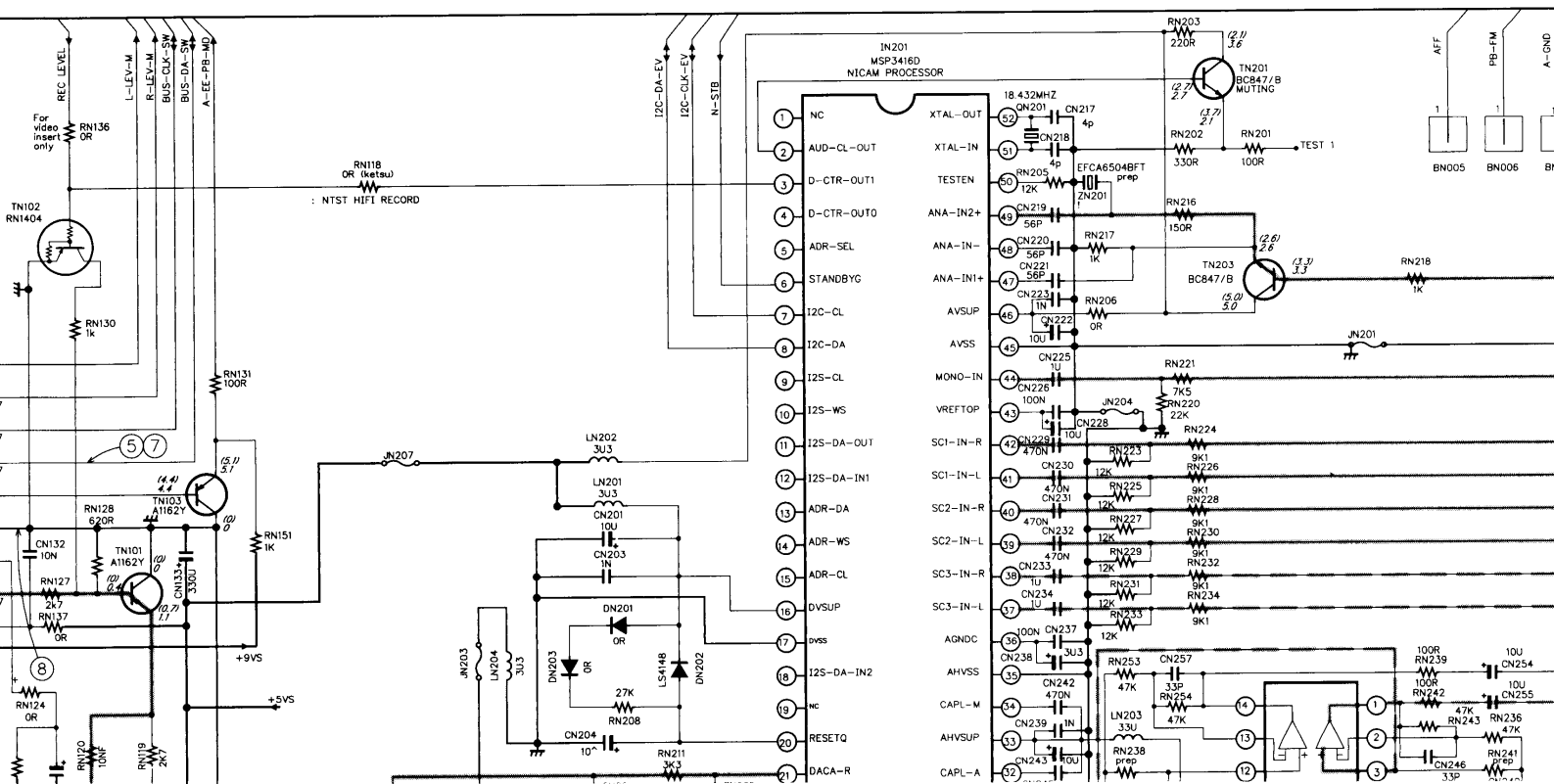
Fig. 3-8-15

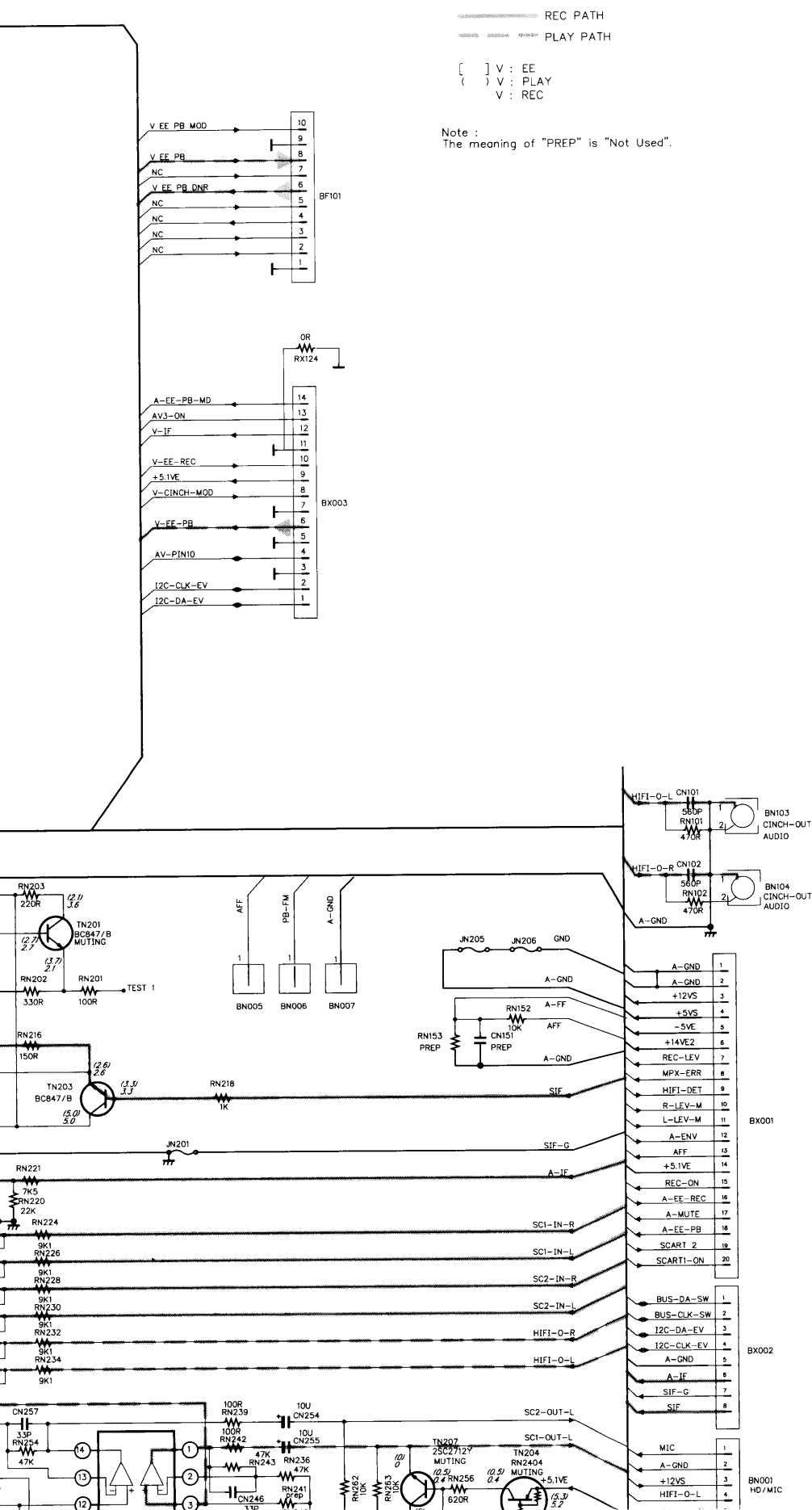
Fig. 3-8-14

# 8-8. Terminal/Audio Circuit Diagram

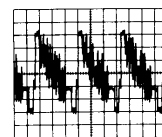
110-9807





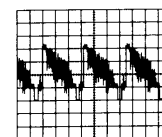


## ① IX101, Pin ②



V:200V/div  
H:20μs/div

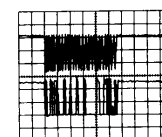
## ② IX101, Pin ⑩



V:500mV/div  
H:20μs/div

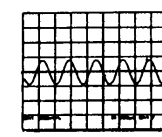
## ③ IX101

- (a) Pin ⑪ (SCL)  
(b) Pin ⑨ (SDA)



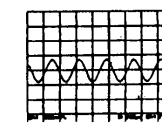
V:2V/div  
H:200μs/div

## ④ IN101, Pin ⑭



LINE OUT  
V:500mV/div  
H:200μs/div

## ⑤ IN101, Pin ⑮



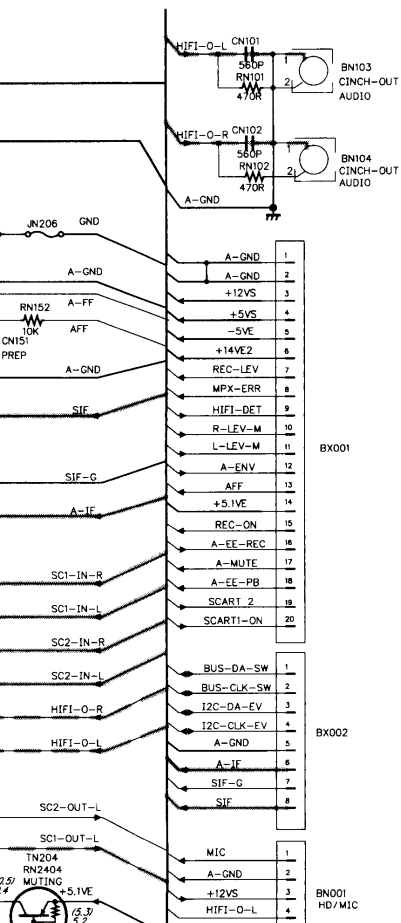
V:500mV/div  
H:200μs/div

REC PATH

PLAY PATH

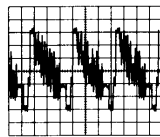
V : EE  
 V : PLAY  
 V : REC

Meaning of "PREP" is "Not Used".



① IX101, Pin ②

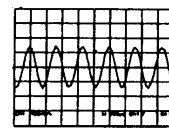
C-5



V:200V/div  
 H:20μs/div

⑥ IN101, Pin ③①

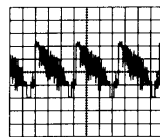
H-4



PLAY  
 V:100mV/div  
 H:200μs/div

② IX101, Pin ①⑥

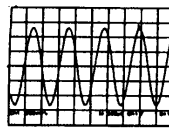
D-7



V:500mV/div  
 H:20μs/div

⑦ IN101, Pin ①⑧

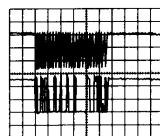
G-6



MOD  
 AUDIO  
 V:200mV/div  
 H:500μs/div

③ IX101  
 (a) Pin ①① (SCL)  
 (b) Pin ①⑨ (SDA)

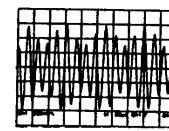
E-7  
 D-5



(a)  
 (b)  
 V:2V/div  
 H:200μs/div

⑧ IN101, Pin ②①

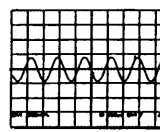
H-5



REC  
 V:200mV/div  
 H:1μs/div

④ IN101, Pin ①④

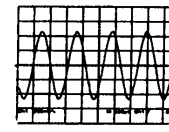
F-5



LINE OUT  
 V:500mV/div  
 H:200μs/div

⑨ IN101, Pin ③⑤

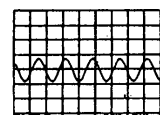
H-4



REC  
 V:200mV/div  
 H:500μs/div

⑤ IN101, Pin ①⑧

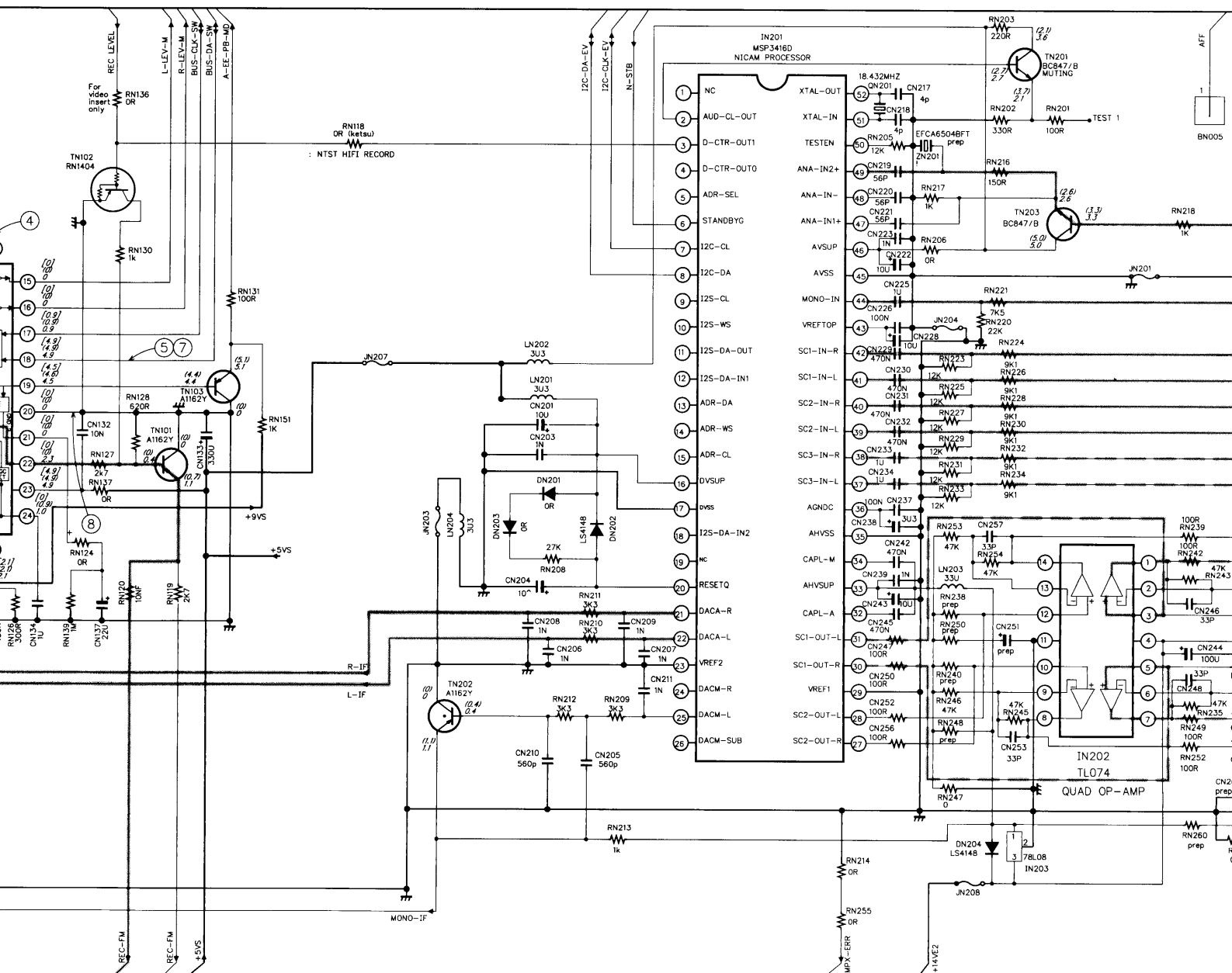
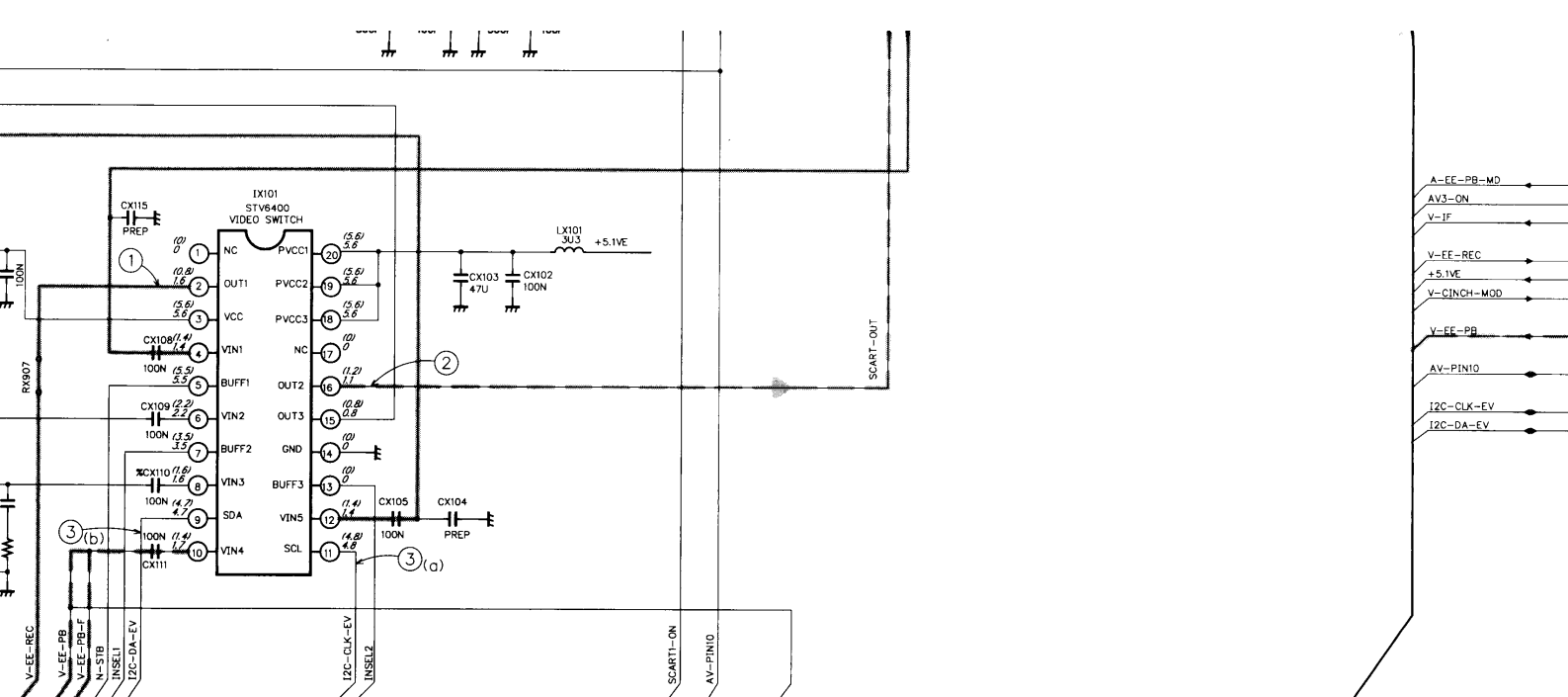
G-6

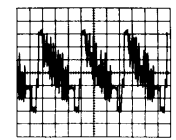
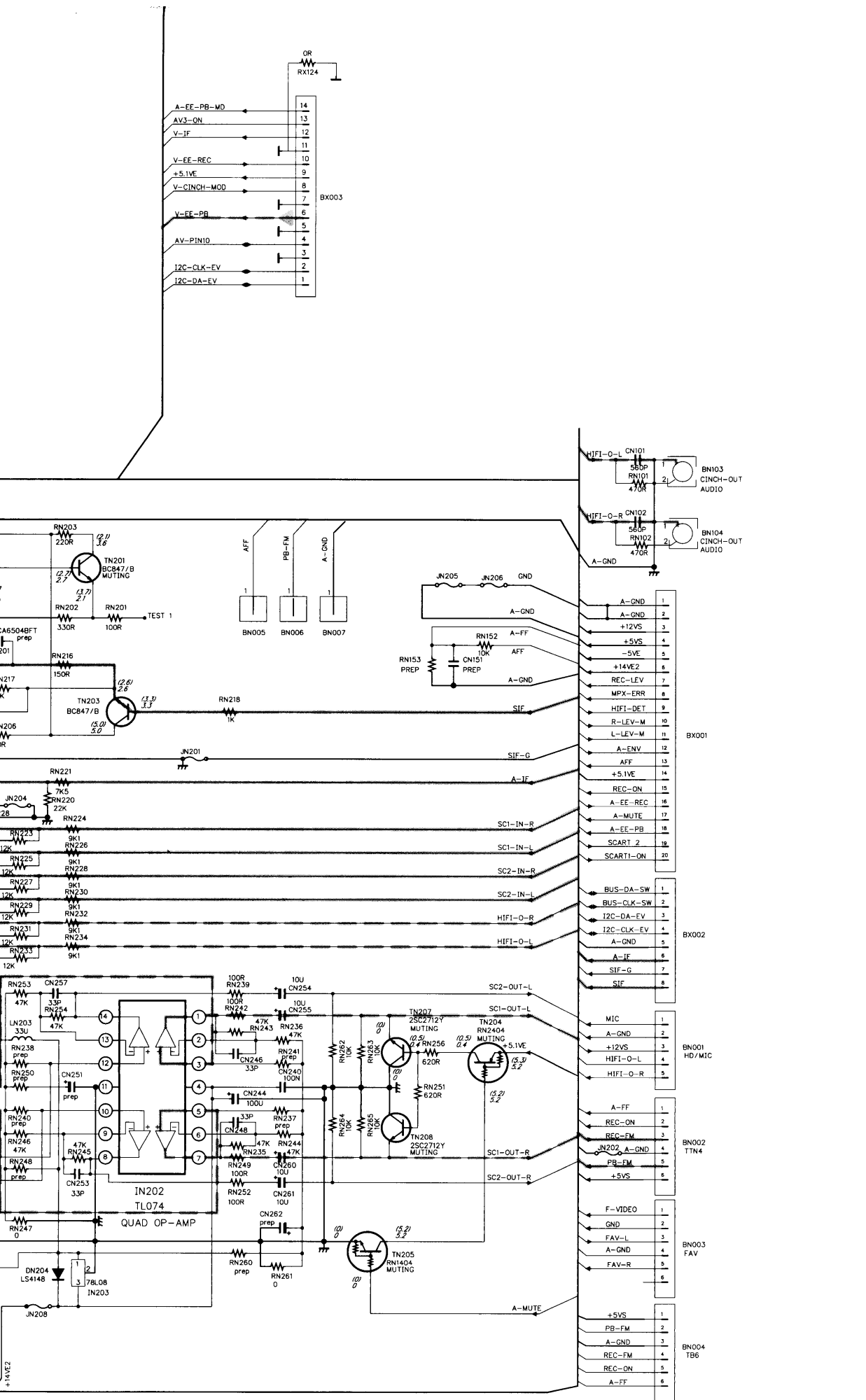


V:500mV/div  
 H:200μs/div

**J**

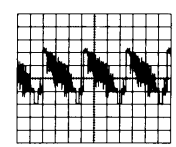






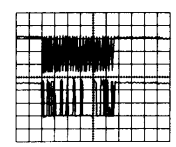
V:200V/div  
H:20μs/div

② IX101, Pin ⑩



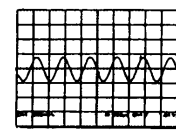
V:500mV/div  
H:20μs/div

③ IX101  
(a) Pin ⑪ (SCL)  
(b) Pin ⑨ (SDA)



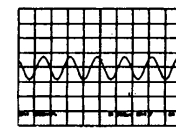
V:2V/div  
H:200μs/c

④ IN101, Pin ⑭



LINE OUT  
V:500mV/div  
H:200μs/div

⑤ IN101, Pin ⑮



V:500mV/div  
H:200μs/div

Fig. 3-8-14

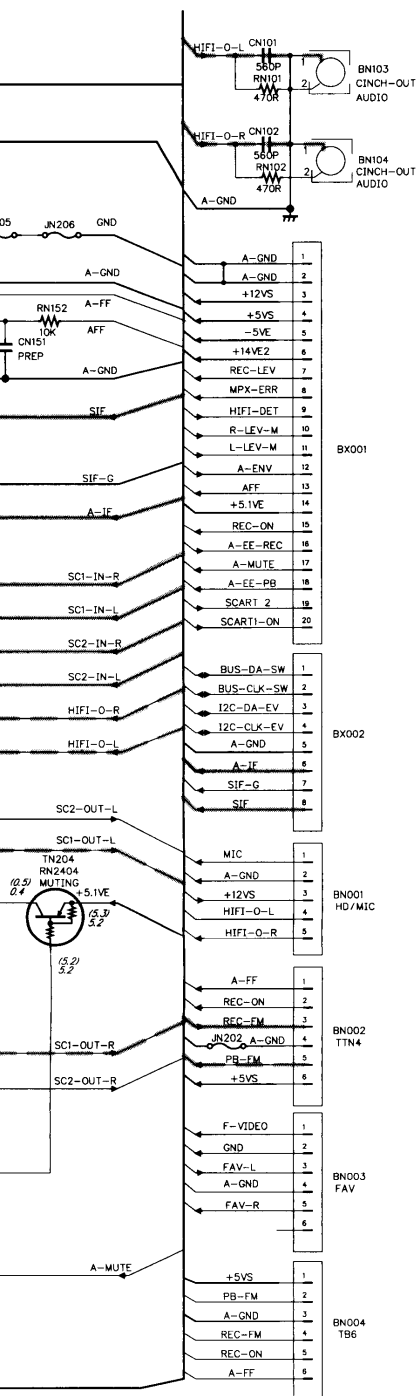


Fig. 3-8-14

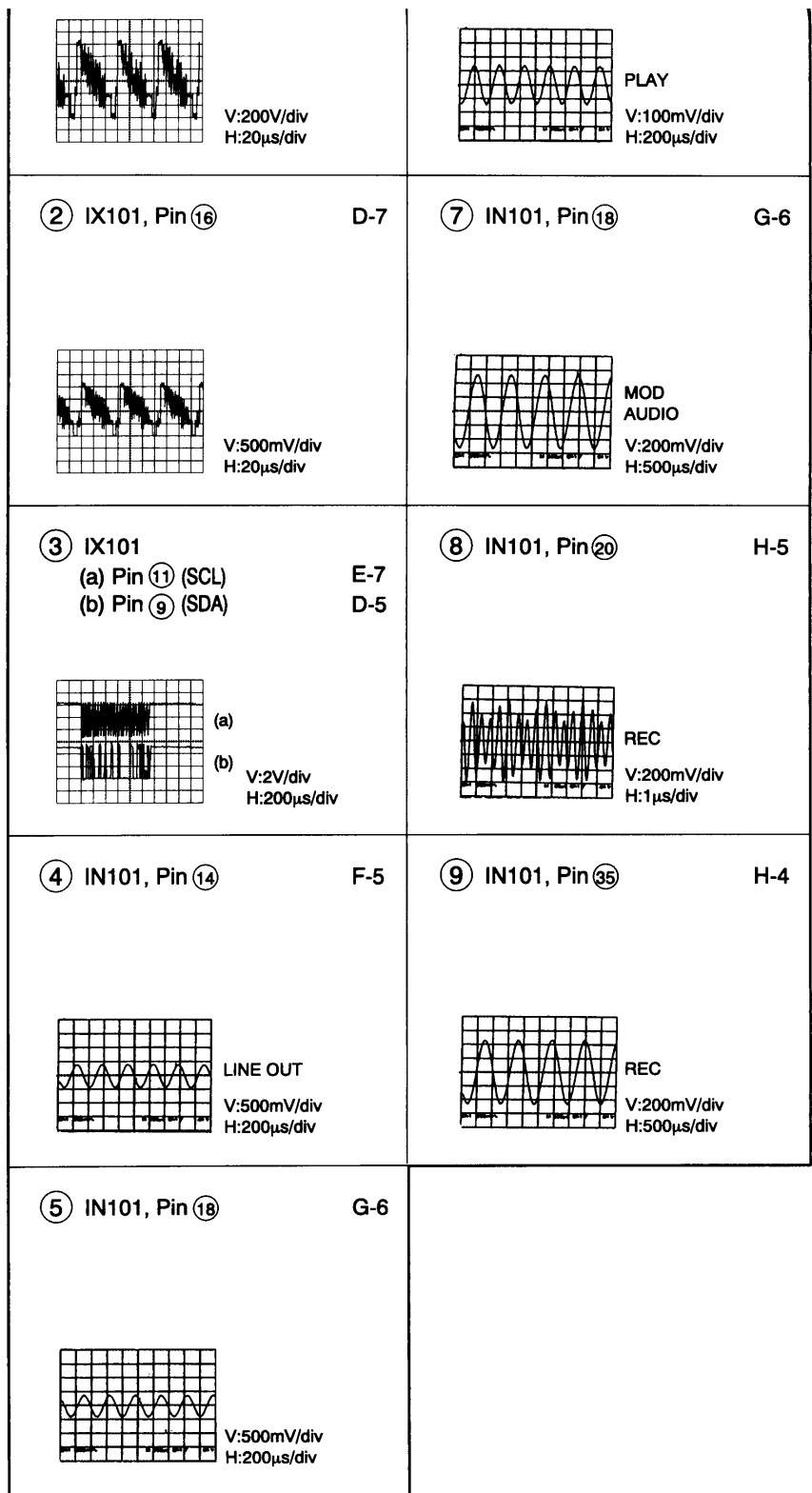


Fig. 3-8-15

# 9. PC BOARDS

9-1. Main (Power, PIF, Servo/Logic, Video, Conventional Audio) PC Board  
110-9807

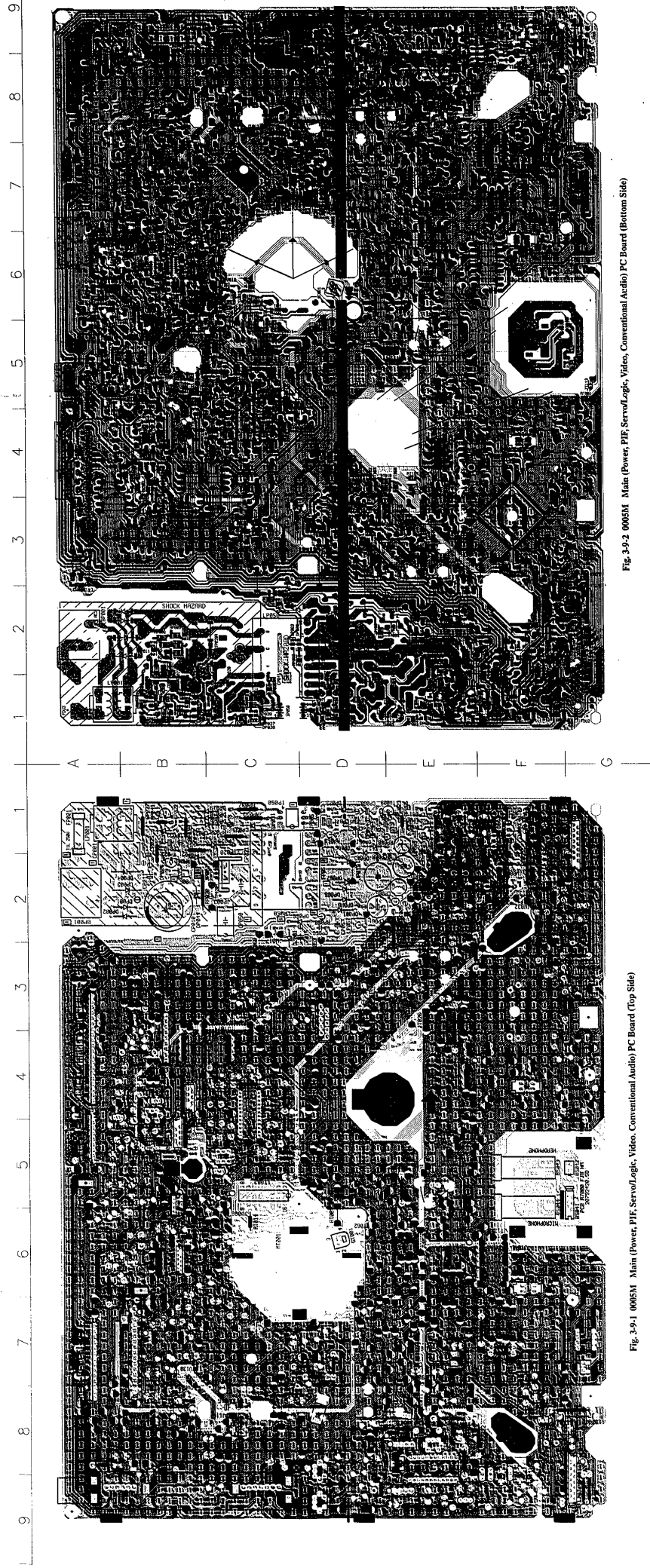


Fig. 3-9-1 0005M Main (Power, PIF, Servo/Logic, Video, Conventional Audio) PC Board (Top Side)

3-56

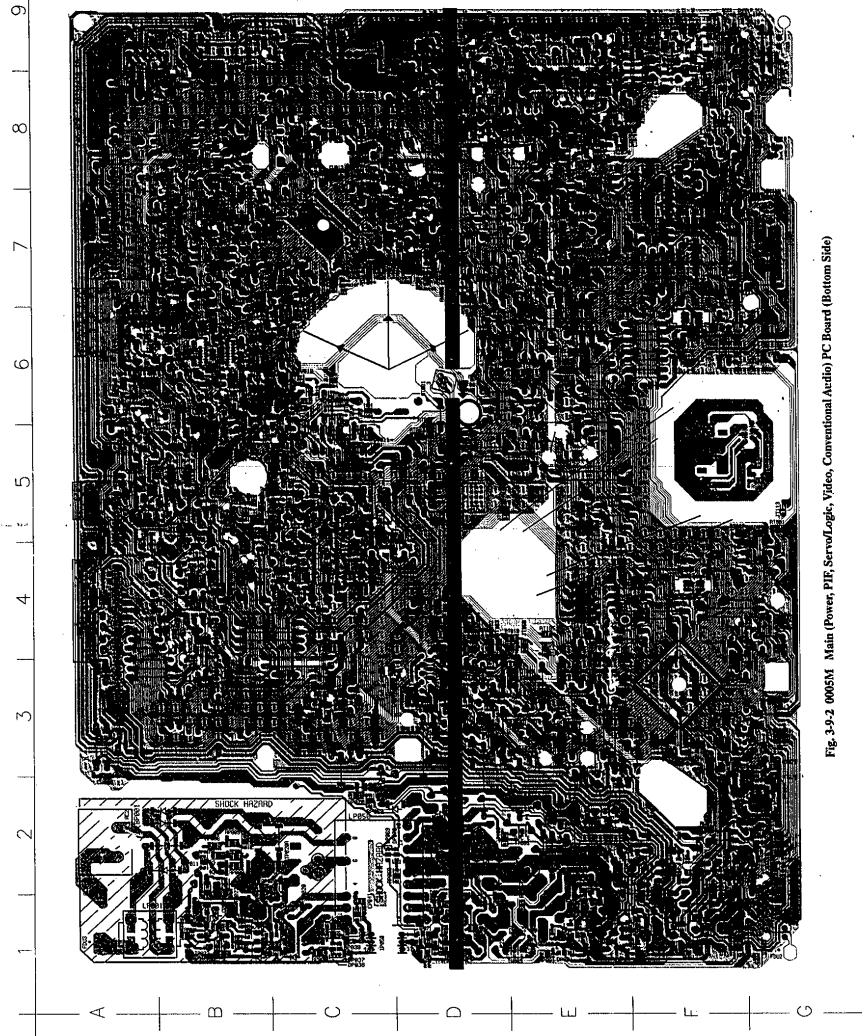


Fig. 3-9-2 0005M Main (Power, PIF, Servo/Logic, Video, Conventional Audio) PC Board (Bottom Side)

3-57

3-58

# 9-1. Main (Power, PIF, Servo/Logic, Video, Conventional Audio) PC Board

110-9807

9 8 7 6 5 4

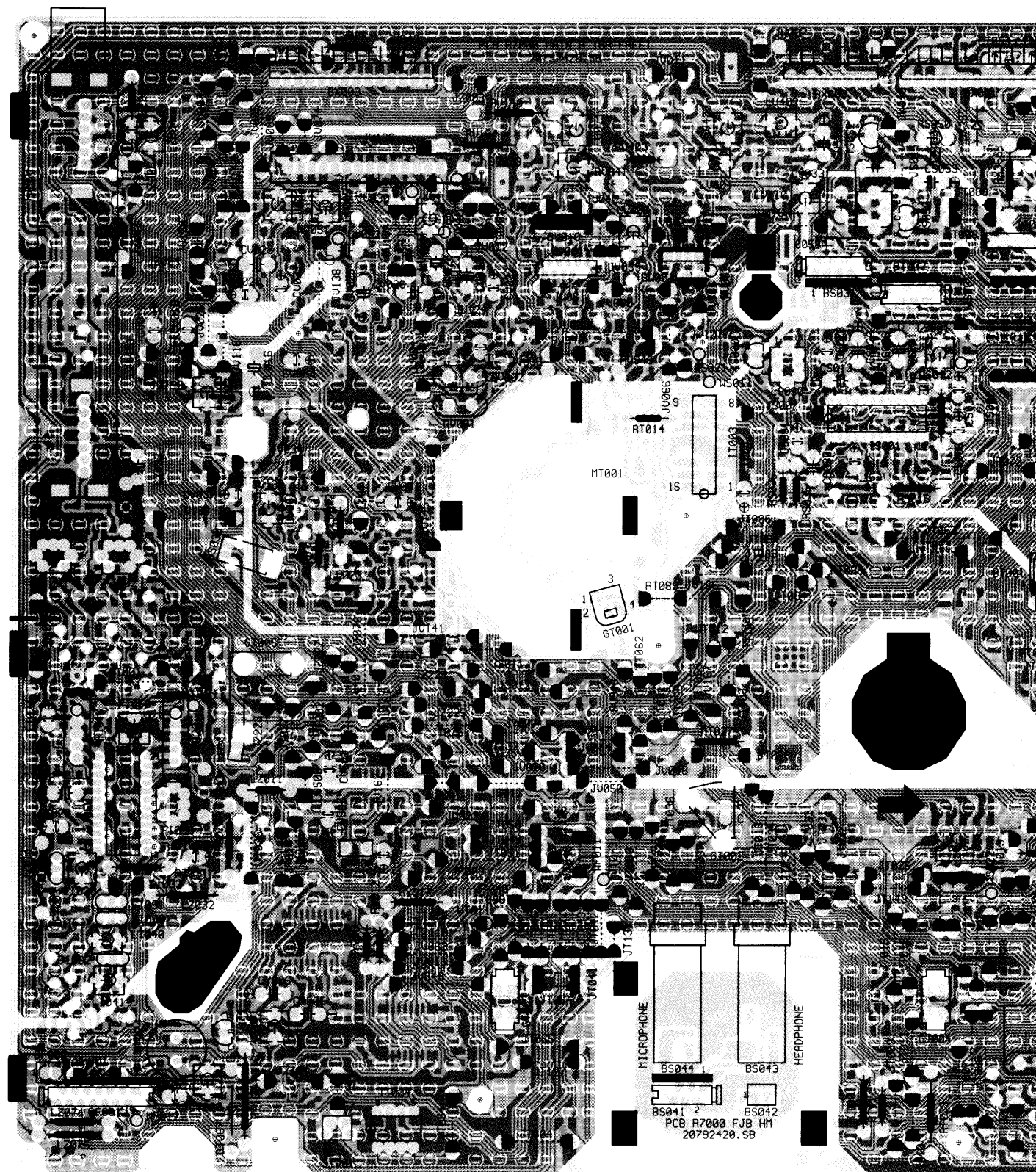
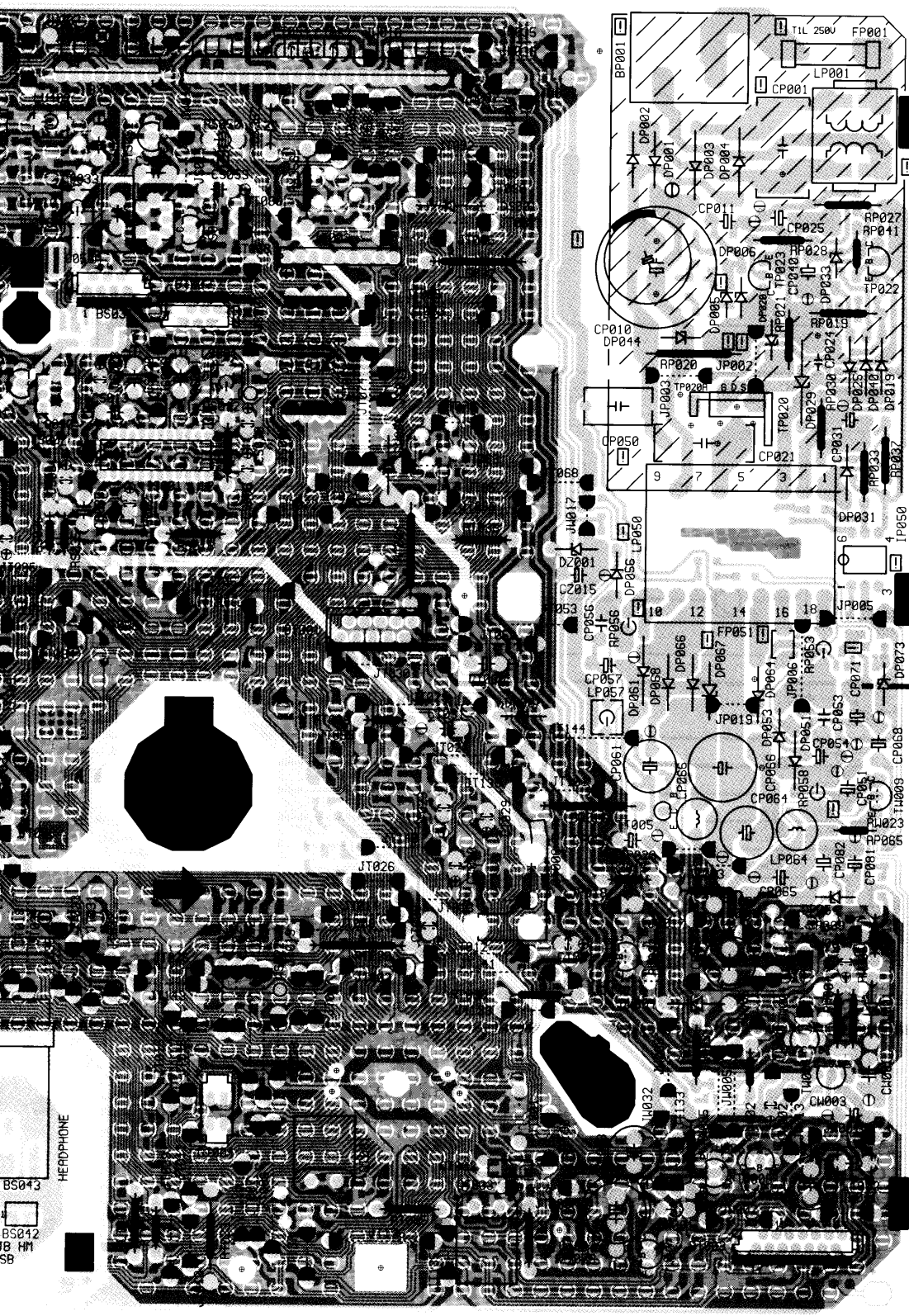
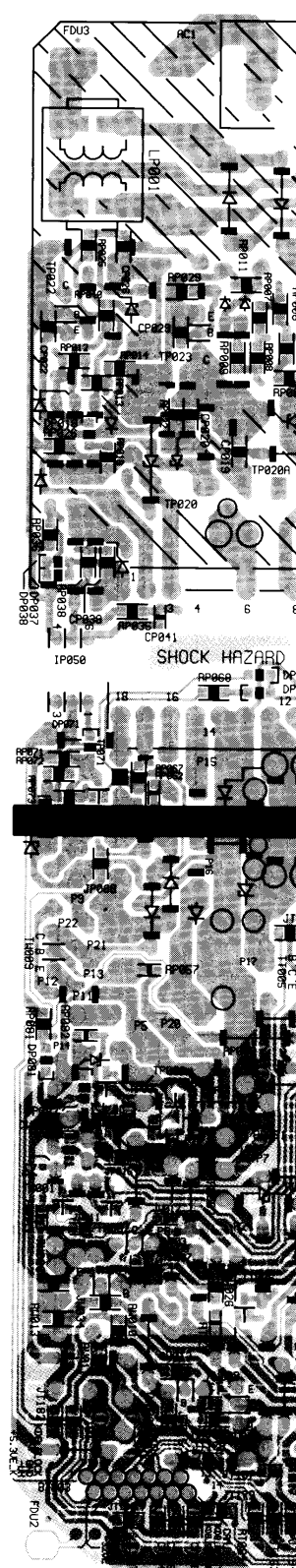


Fig. 3-9-1 0005M Main (Power, PIF, Servo/Logic, Video, Conventional Audio) PC



### Logic, Video, Conventional Audio) PC Board (Top Side)



**3-57**

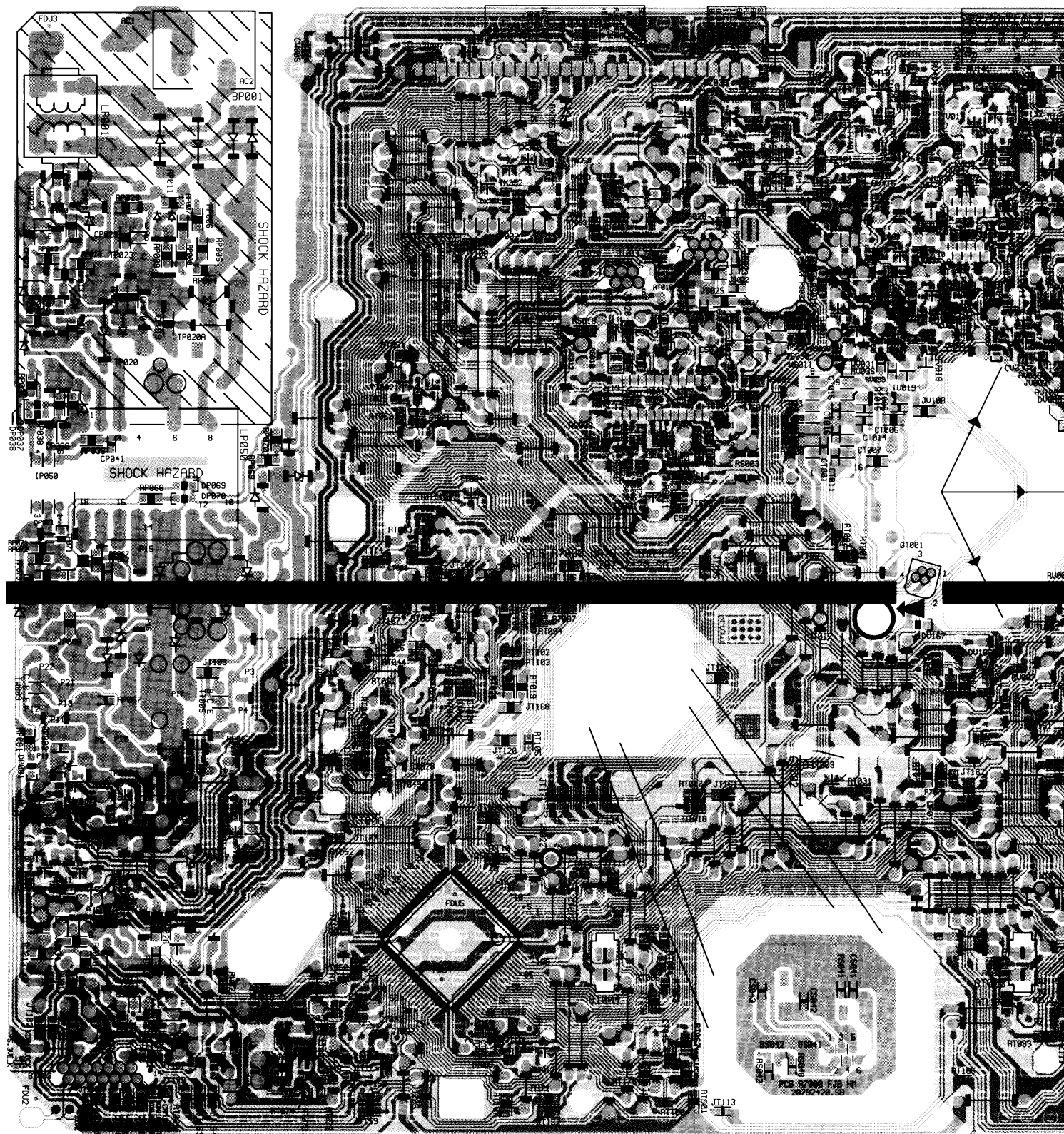


Fig. 3-9-2 0005M Main (Power, PIF, Servo/Logic, Video, Conventional Audio) PC Board (Bo

4

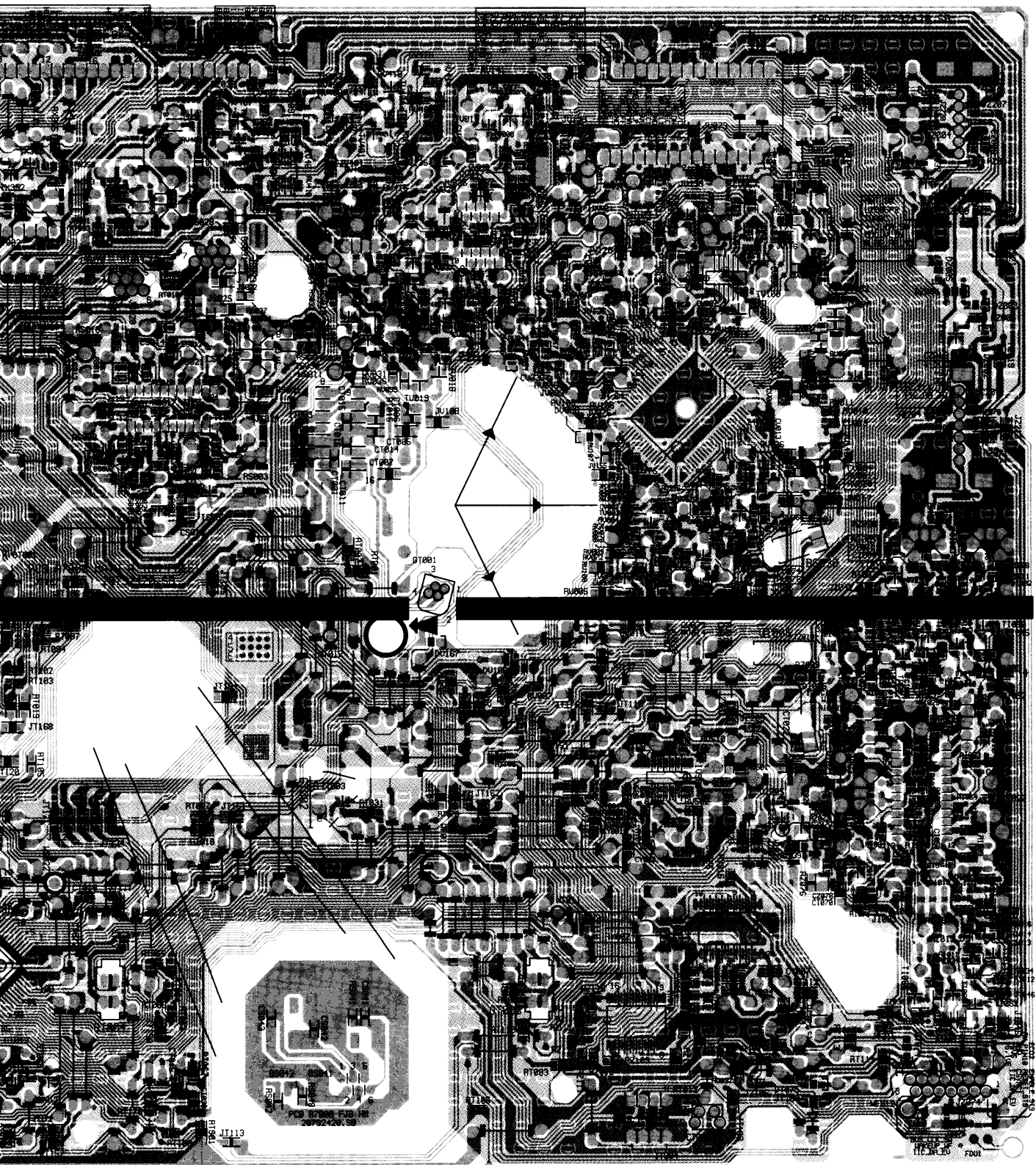
5

6

7

8

9



Main (Power, PIF, Servo/Logic, Video, Conventional Audio) PC Board (Bottom Side)



1

2

3

4

5

## 8-7. 3DNR Circuit Diagram

BF202

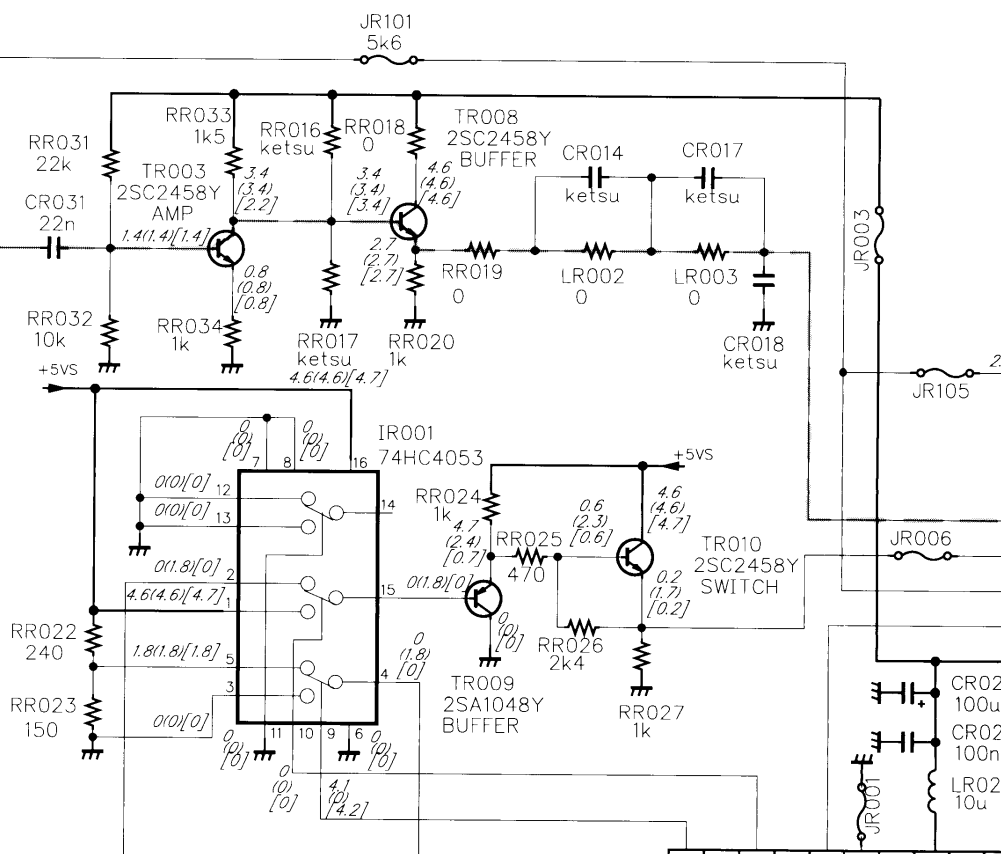
1	2	3	4	5
GND	NC	NC	NC	NC

To BF101  
0030M TE

BF301

To 0005M MAIN  
(SERVO/LOGIC)

1	FSC 1
2	GND
3	PB COL



1	BLANK
2	NC
3	PV
4	NC
5	C SYNC 1
6	GND
7	NC
8	+5VS
9	NC
10	NC

To BF402  
0005M MAIN (VIDEO)

6

7

8

9

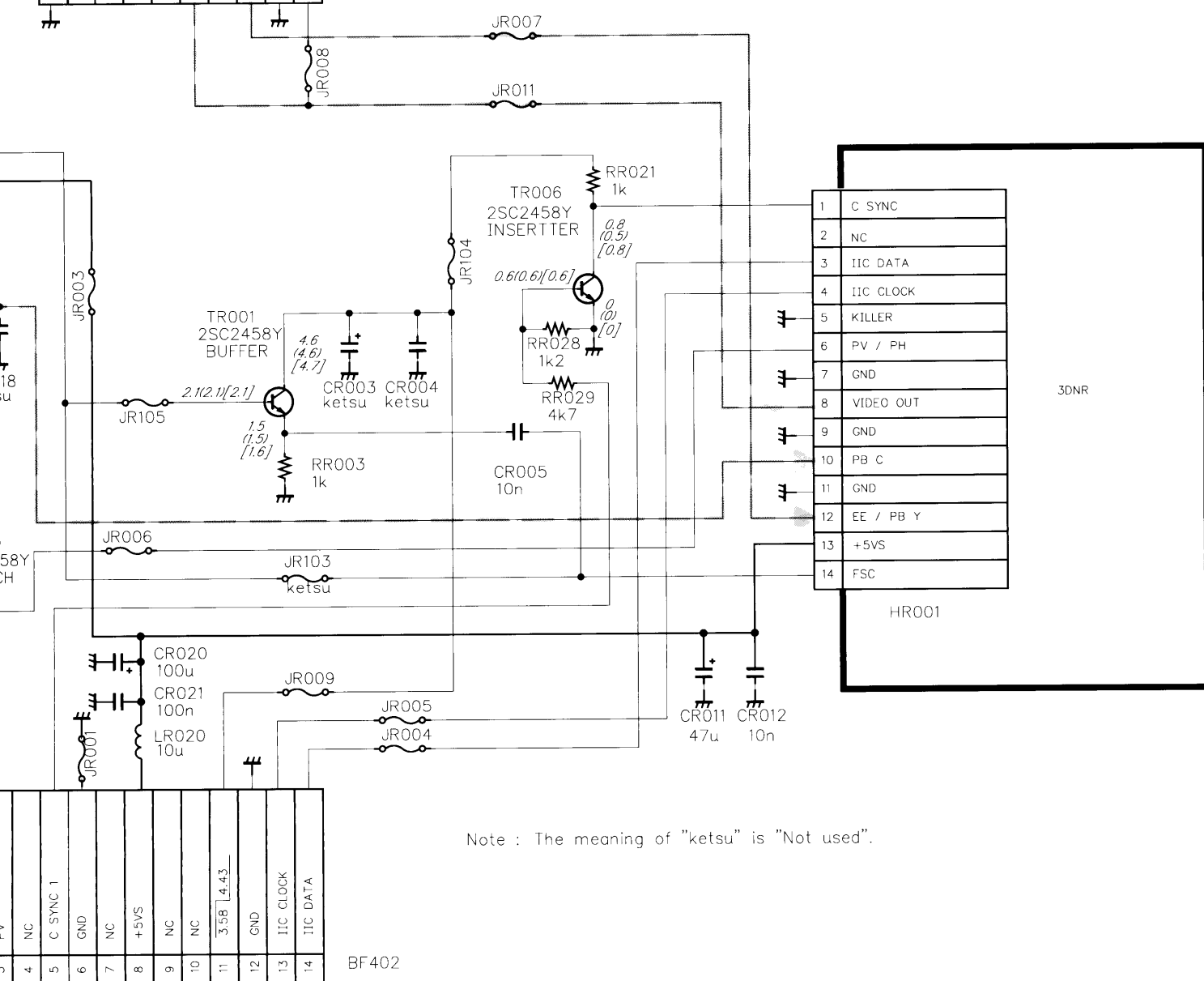
10

BF202  
To BF101  
0030M TERMINAL

1	2	3	4	5	6	7	8	9	10
GND	NC	NC	NC	NC	V EE PB DNR	NC	V EE PB	GND	V EE PB MOD

VIDEO PLAY

V : REC  
( ) V : PLAY  
[ ] V : EE



Note : The meaning of "ketsu" is "Not used".

Fig. 3-8-13



9-2. Terminal/Audio PC Board

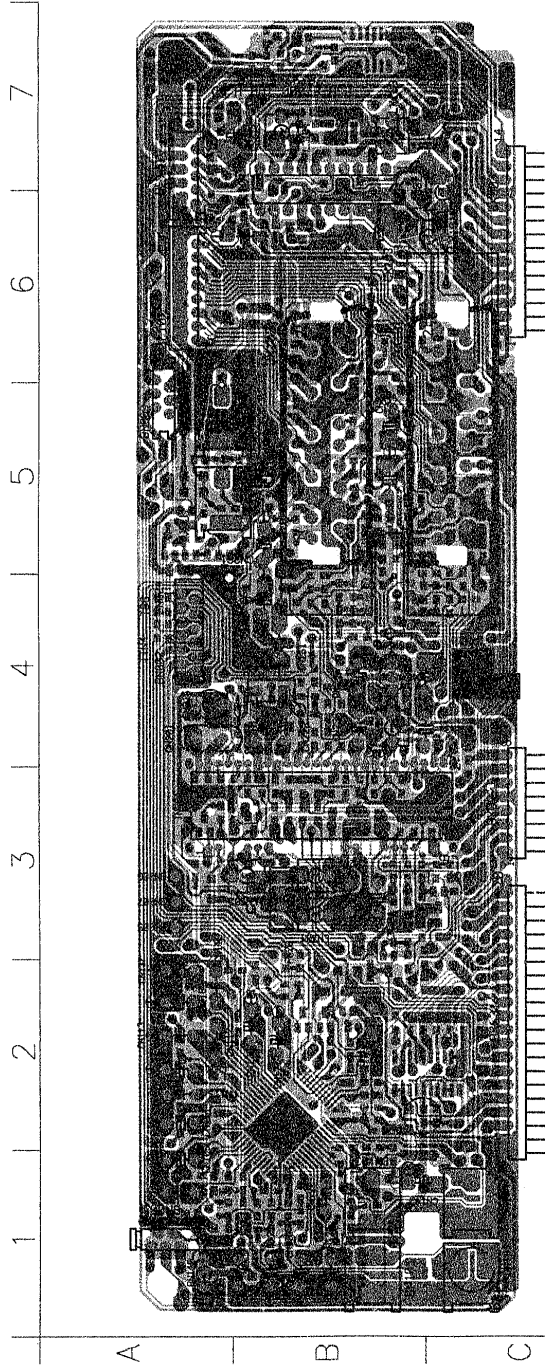


Fig. 3-9-3 0030M Terminal/Audio PC Board (Top Side)

9-3. FCB PC Board

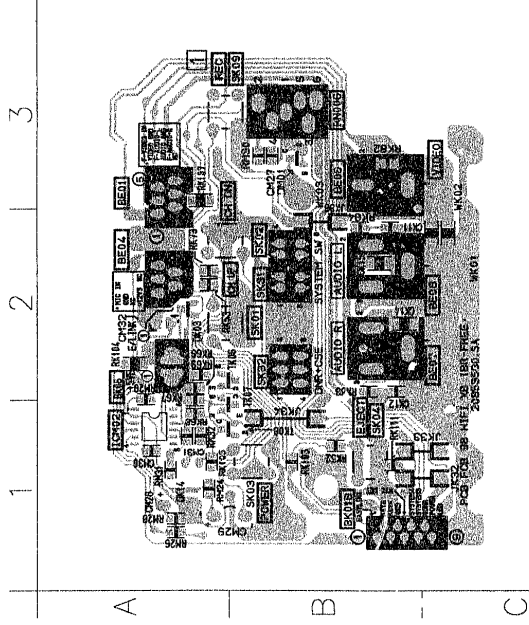


Fig. 3-9-5 0212M FCB PC Board

9-4. JSB PC Board

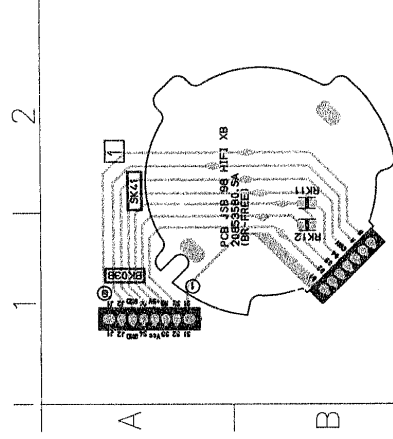
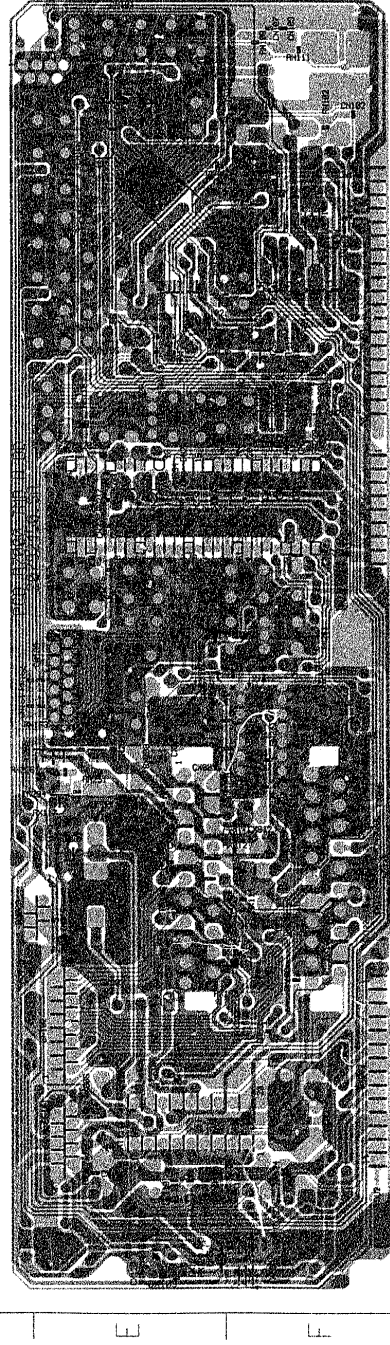


Fig. 3-9-4 0030M Terminal/Audio PC Board (Bottom Side)



## 9-2. Terminal/Audio PC Board

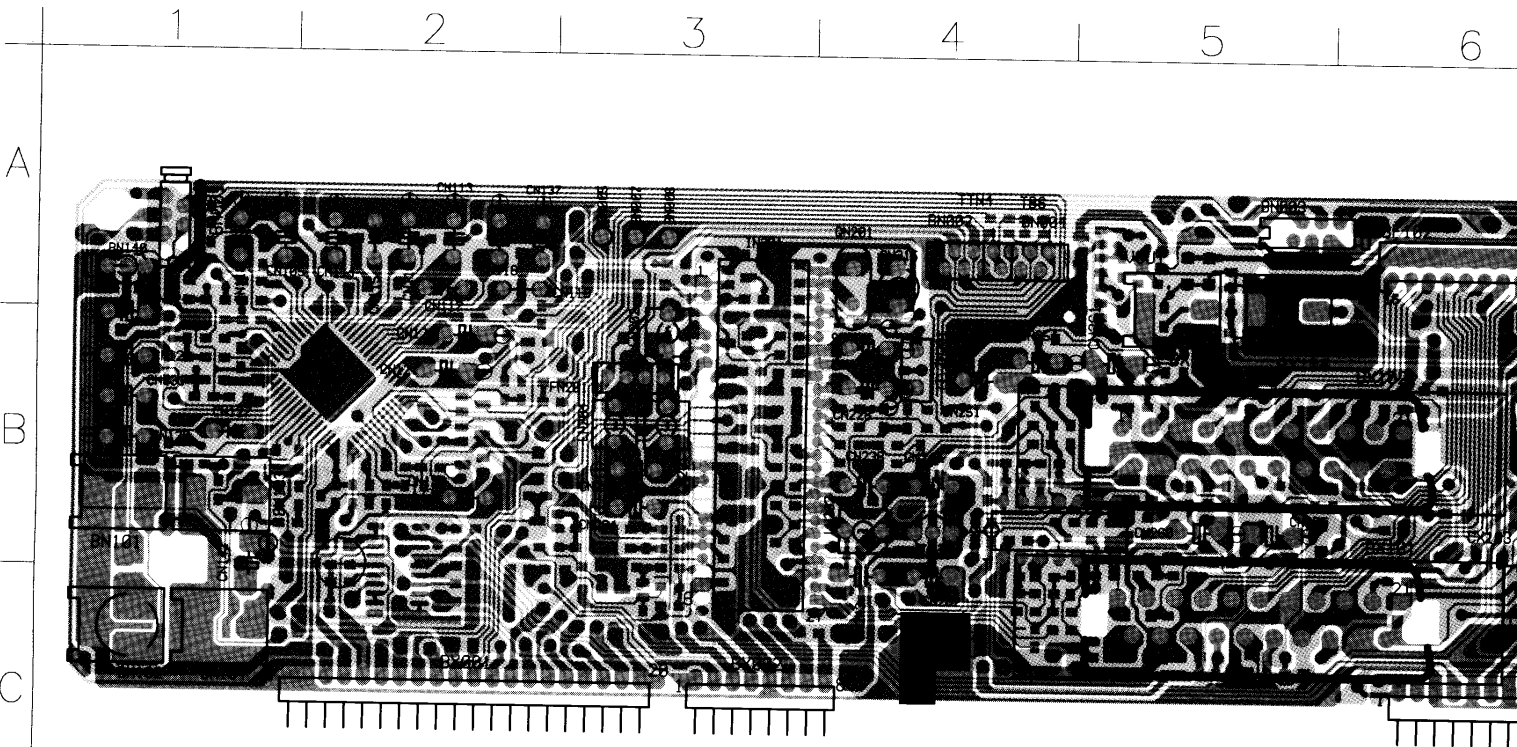


Fig. 3-9-3 0030M Terminal/Audio PC Board (Top Side)

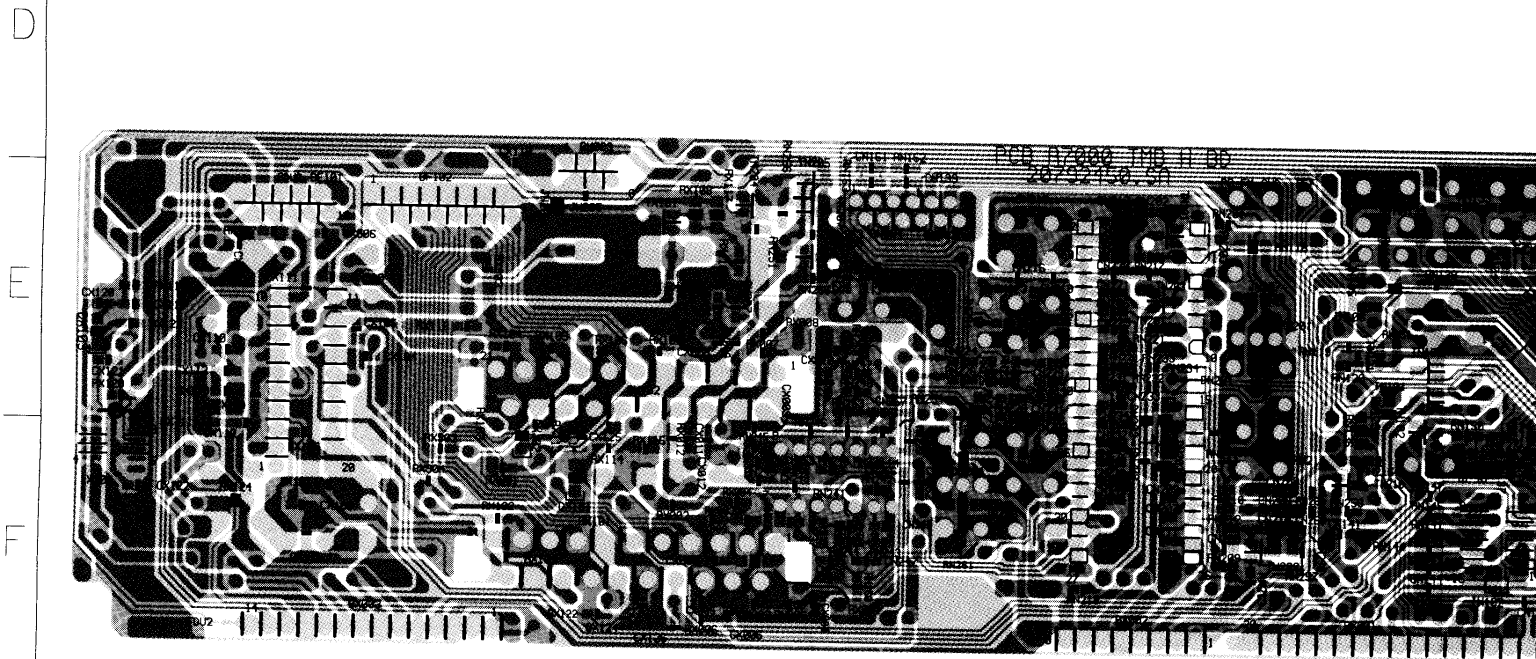


Fig. 3-9-4 0030M Terminal/Audio PC Board (Bottom Side)

### 9-3. FCB PC Board

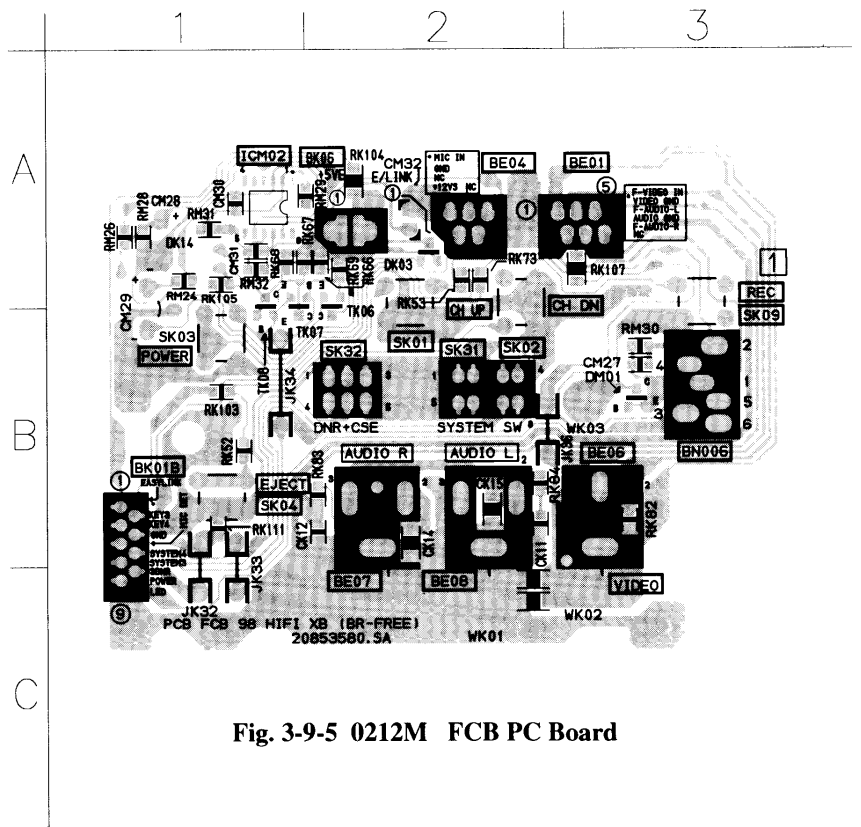
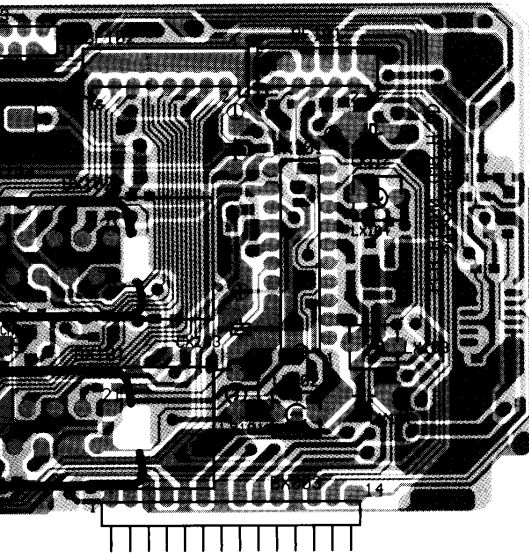


Fig. 3-9-5 0212M FCB PC Board

### 9-4. JSB PC Board

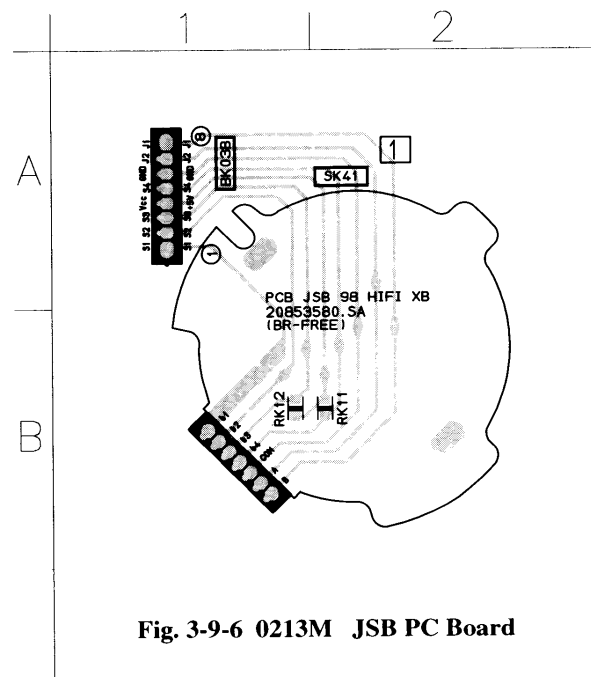
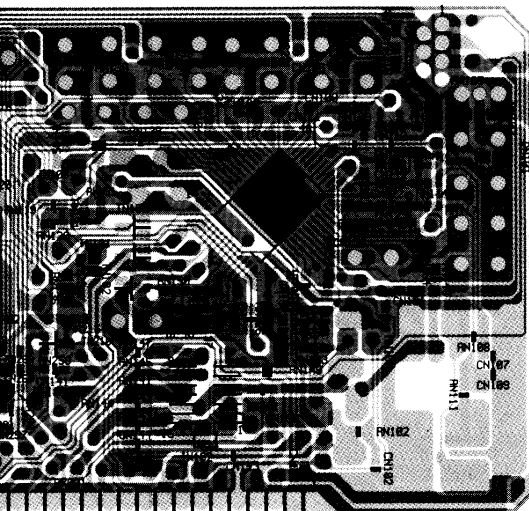


Fig. 3-9-6 0213M JSB PC Board

9-5. KDB PC Board

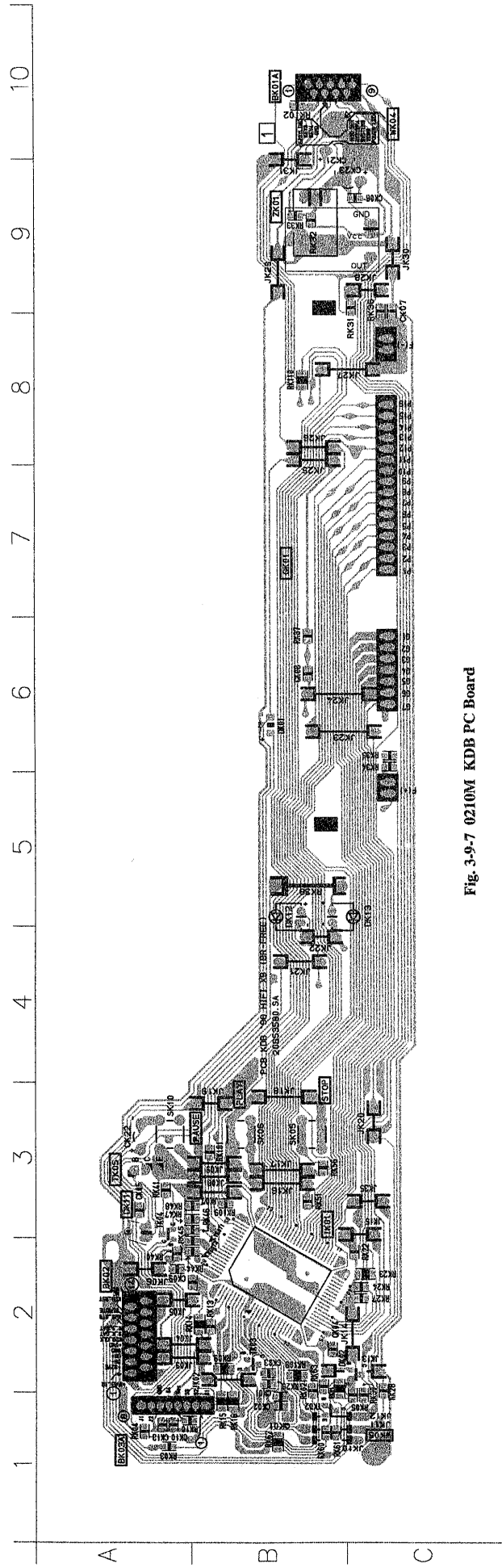


Fig. 3-9-7 0210M KDB PC Board

9-6. 3DNR PC Board

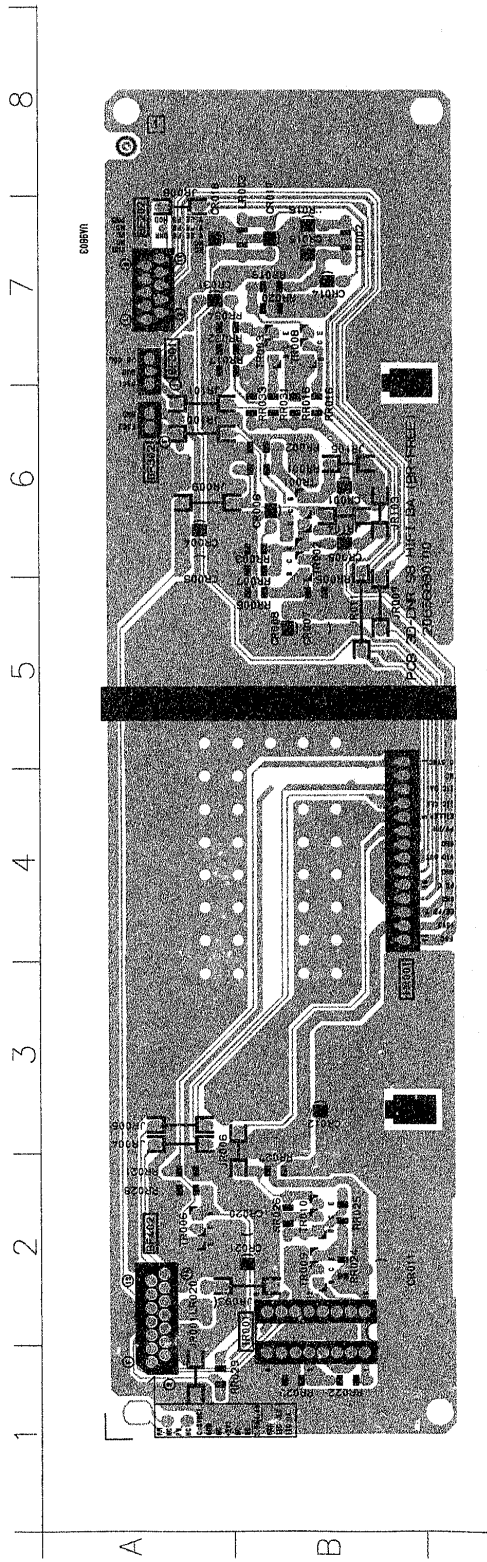
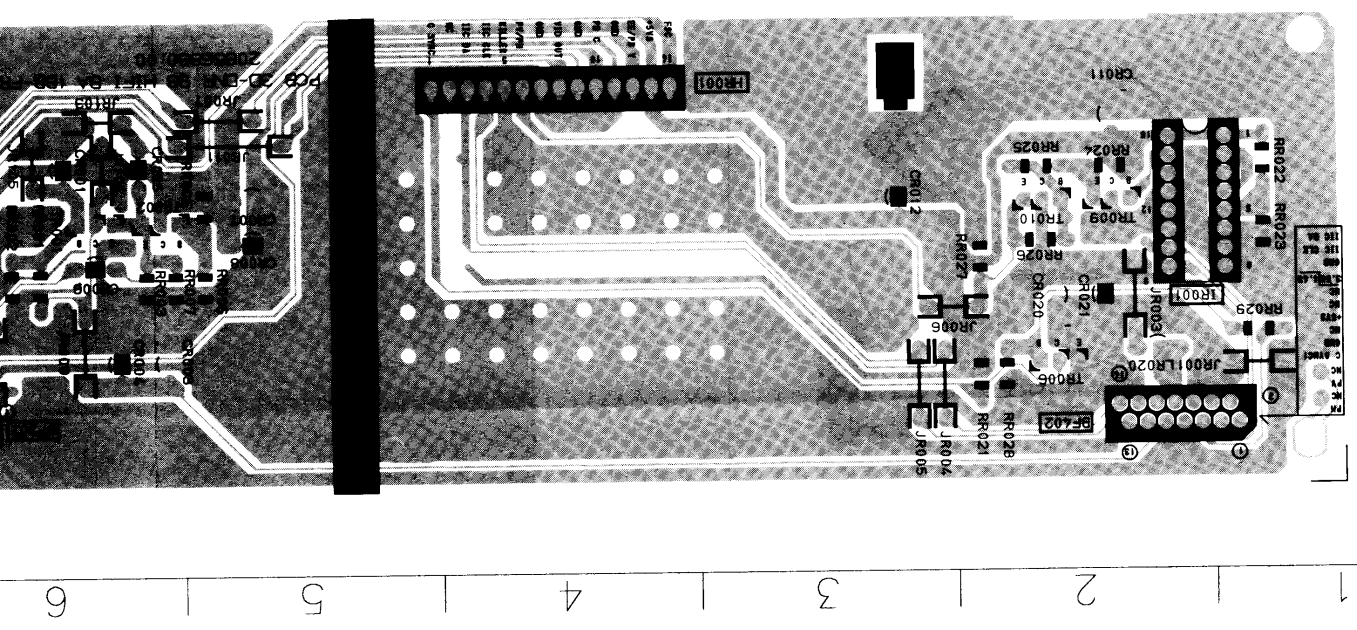


Fig. 3-9-8 0094M 3DNR PC Board

A B

9-6. 3DNR PC Board



3-61

Fig. 3-9-8 0094M 3DNR PC Board

A B C

9-5. KDB PC Board

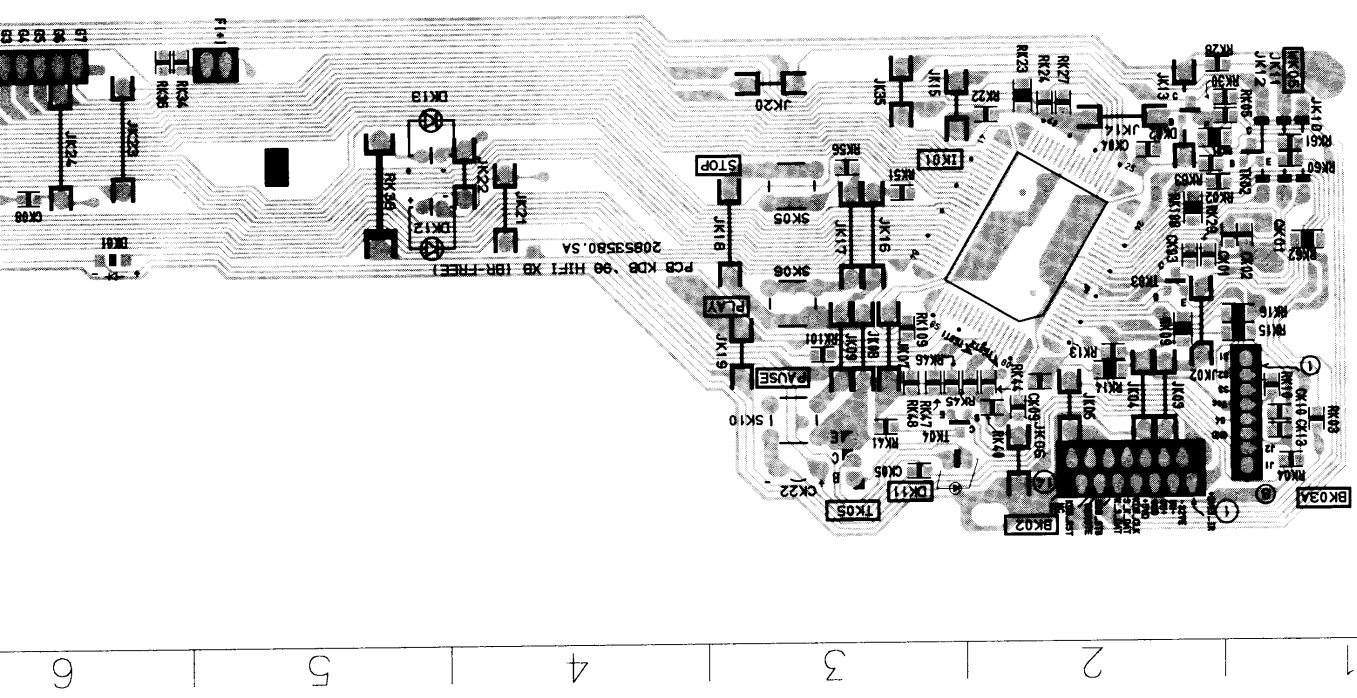
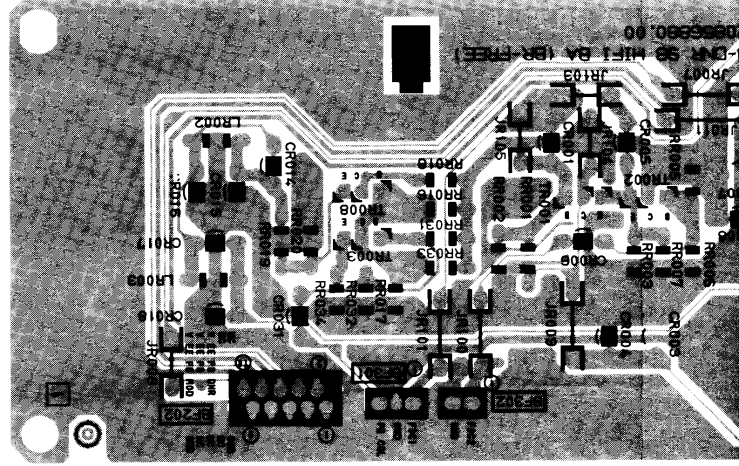


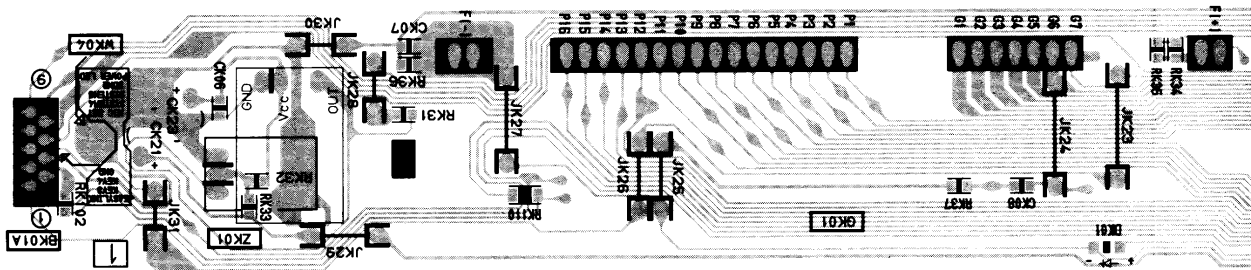
Fig. 3-9-7 0210M KDB PC Board



0086VH

8 7 6

10M KDB PC Board



10 9 8 7 6